

NOVEMBER 1991

STILL ONLY £1.60

NEW ACORN A5000

FULL DETAILS

IF DISC NOT ATTACHED PLEASE ASK YOUR NEWSAGENT

ISSN 0263-7456
9 770263 745000 11

FUN AND GAMES

FREE 32 PAGE GAMES SUPPLEMENT INSIDE

TOP 20 GAMES • BIGGEST SELLERS • BBC GAMES

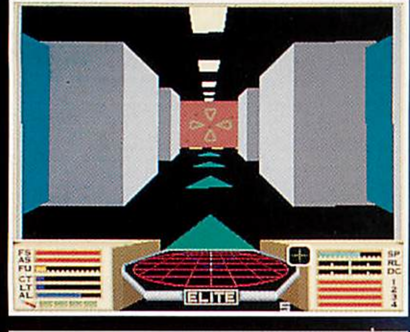
PORTABLE PRINTERS • EDUCATIONAL GAMES • USING FONTS

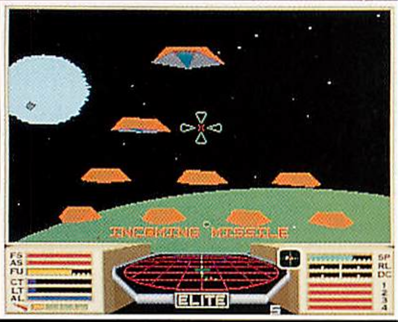
NAME: ELITE

RATING: THE BEST-SELLING HOME COMPUTER GAME OF ALL TIME

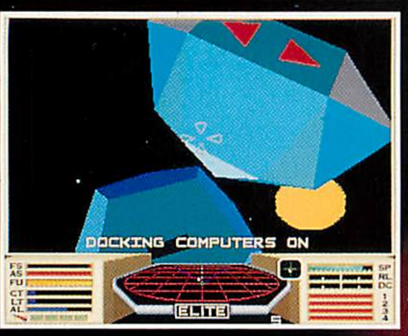
STATUS: NOW FOR THE ACORN ARCHIMEDES, A3000 AND A5000

RIGHT ON COMMANDER!









HYBRID PRESENTS IAN BELL & DAVID BRABEN'S "ELITE"

by WARREN BURCH & CLIVE GRINGRAS for ACORN ARCHIMEDES 1MB RAM RISC-OS

£39.95 CHEQUE OR POSTAL ORDER TO HYBRID

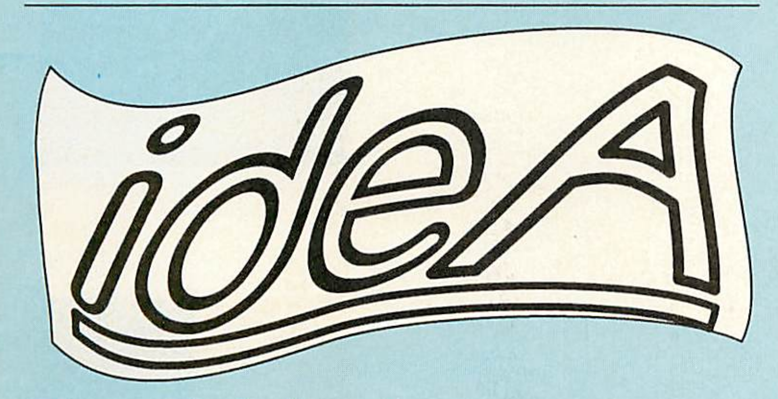
88 BUTT LANE MILTON CAMBRIDGE CB4 6DG TELEPHONE 0223 861522



- Professional quality textual graphics
- Everything you need in one package, simple and easy to use
- Converts fonts into drawfiles
- Produces outlines and three types of shadows
- Bends text along paths of any shape
- Produces arcs, slopes, etc... with kerning and micro justification
- Designed for ease of use – you can see your results very quickly, and modify them without going back to square one
- Finished files can be dropped into any application which accepts drawfiles

£70 including site licence, £25 for single user licence

Drawbender (£12) can be used to distort finished *Fontasy* files in even more ways. Includes site licence if you purchase a *Fontasy* site licence at the same time.



The Original

Our full range of internal and external hard disc upgrades has been available for a year now, please turn to page five for a detailed price list.

When it comes to IDE we have the experience.

Look out for...
Printing documents larger than A4 can be a problem, not for long! Watch out for our inexpensive and easy solution!

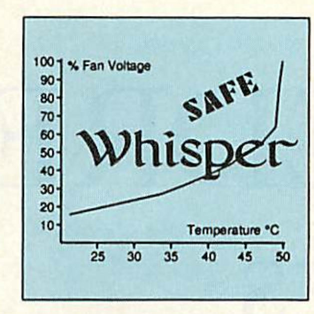
Padlock
Lock directories to stop those prying eyes. Protect your valuable or private data on your hard disc!

Call for more information on any of our products

Ian Copestake Software

051-632 1234

INNOVATIVE PRODUCTS FROM IAN COPESTAKE SOFTWARE



FAN QUIETENER
- Monitors temperature in two places
- Varies speed of fan from 10% to 100% depending on temperature of machine
- Easy to fit, *no soldering*
- Automatic test sequence on power-up
- Suitable for Acorn Archimedes, 300 and 400 series.

When did you last replace your fan filter? Failure to do this could restrict air flow, cause overheating and perhaps damage your hard disc. A free fan filter with every *Whisper* purchased this month. Complete fan kits also available at £12.

Whisper with free fan filter – £15



QUICKEY
- Function key strips on your screen
- You can position the keystrip anywhere and adjust its size
- Just use the mouse to 'press' a function key or control key
- *QuicKey* knows which application you are using and will show you the appropriate function key definitions – automatically!

You only have to lift your finger!

Site licence – £45, single user copy – £10

TASK AND WINDOW ORGANISER

- Start several applications, display directories and open files, all in one go
- Define your own tasks easily
- Tidy up your screen display and find windows quickly
- *A genuine timesaver and a great help!*

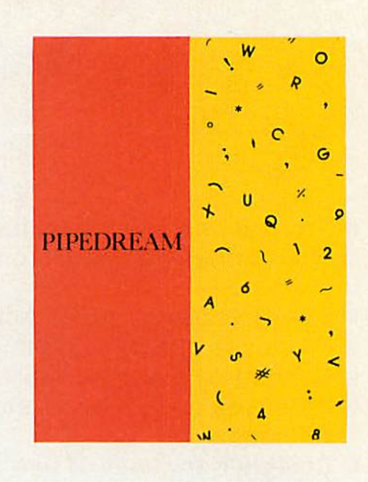
Ideal for classroom use, network compatible.

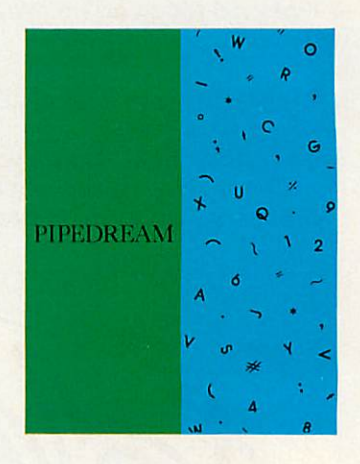
Site licence – £60, single user copy – £19

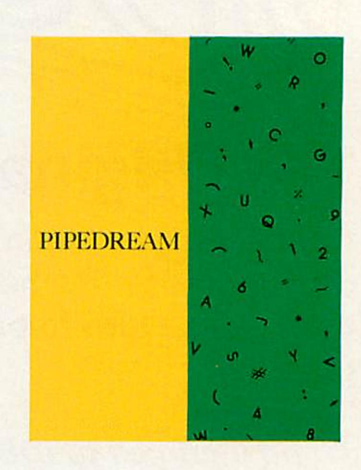
Prices do not include VAT

See pages four and five for our full, competitive, price list

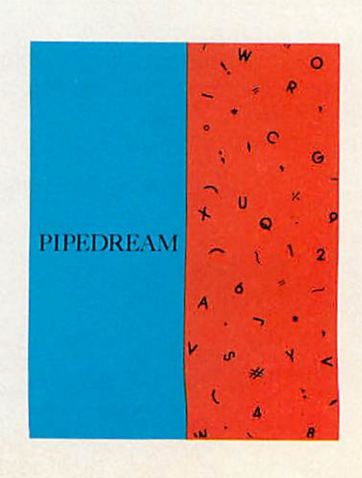
PIPEDREAM shows its true colours











NOVEMBER 1991
ISSUE 112



COVER ILLUSTRATION BY
MATTHEW RICHARDSON

Editor Barry Monk
Assistant Editor Karen Donaghay
Technical Assistant Paul James
Art Editor Tony Judge
Editorial Assistant Sharon Halpern
Advertisement Manager Duncan Pringle
Senior Sales Executive Richard Power
Sales Executive Jack Manzoor
Ad Production Fiona Andrews
Production Manager Jennifer Jeffrey
Publisher Seamus Geoghegan
Publishing Director Michael Potter
Editorial Director Christopher Ward

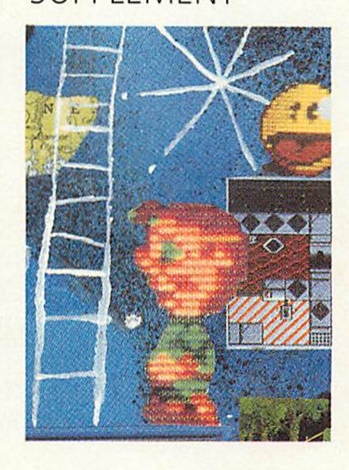
Published by Redwood Publishing, a BBC Enterprises Company, 20-26 Brunswick Place, London N1 6DJ. Tel: 071-490 1444. Telecom Gold 10081:RED001, Micronet 919992492. Bureau setting and ad typesetting by Bold Gray Design, 52 Rosebery Avenue, London, EC1R 4RP. Colour by Trumps Studio, Ware, Herts. Printed by Riverside Press, St Ives PLC, Gillingham. Distributed by BBC Frontline, Park House, 117 Park Road, Peterborough. Redwood Publishing is a registered data user. ISSN 0263 7456.

ABC

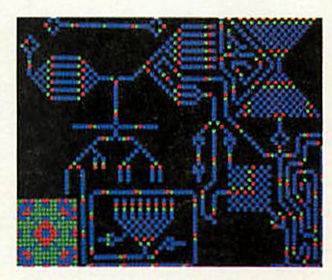
PRODUCED ON THE ARCHIMEDES

All the editorial pages in BBC Acorn User are produced on a DTP system using Acorn Archimedes 440/1 and A540 computers, Computer Concepts' *Impression 2* with Laser Direct printers and Taxan monitors

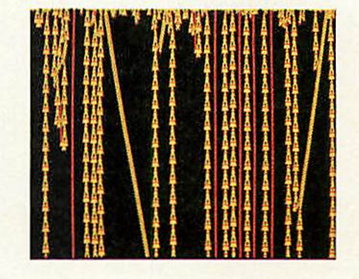
105
32-PAGE GAMES SUPPLEMENT



49
★INFO



71
1-D LIFE



144
RENDER BENDER 2



Ian Copestake Software

OCTOBER 1991

Title	Publisher	Price
1st Word Plus	Acorn	£62
– extra manual	Acorn	VO £10
A3000 Technical Guide	Acorn	VO £30
A540 Technical Guide	Acorn	VO £65
ABC Basic Compiler	Oak	£73
– ABX Utils		£39
Adventure Language Programming System	Alpine	£28
Alerion	Dabs	£11
Alien Invasion	Dabs	£11
All-In Boxing	Dabs	£11
Alphabase	Clares	£34
Amazing Ollie		£13
Ancestry	Minerva	£59
ANSI C Release 3	Acorn	£102
– extra manual	Acorn	VO £19
Apocalypse	4th Dim	£20
Arcade 3 Compilation	Clares	£12
Arcade Soccer	4th Dim	£15
ArcComm 2	Longman	£38
ArcDFS	Dabs	£22
Arcendium	Dabs	£13
Archimedes Assembly Language	Dabs	VO £15
– with disc		£22
Archimedes First Steps	Dabs	VO £10
Archway 2	Simtron	£78
ArcLight	Ace	£38
ArcMonitor	CIS	£21
ARC-PCB	Silicon	£138
– Professional	Silicon	£269
– Schematics	Silicon	£475
ArcPinball	Shibumi	£18
Arcterm 7	Serial Port	£59
ARCticulate	4th Dim	£18
ARCtist	4th Dim	£18
ArcTrivia	Moray	£21
Armadeus	Clares	£59
Artisan II	Clares	£43
Astro	Topologika	£18
Atelier	Minerva	£63
Autosketch CAD	Autodesk	£65
Avon	Topologika	£16
Ballarena	Eterna	£15
BASIC V Guide	Dabs	VO £10
BBC Basic Guide	Acorn	VO £19
Blaston	Eterna	£15
BlowPipe	Eclipse	£15
Boogie Buggy	4th Dim	£17
Boxing Manager	Krisalis	£20
Break 147 & Superpool	4th Dim	£18
Broadcast Loader	Acorn	£63
Bug Hunter / MoonDash	Minerva	£15
Bug Hunter in Space	Minerva	£14
Business Accounts	Minerva	£298
Business Supplement	CC	£40
Cambridge Pascal	Dabhand	£60
Cartoon Collection	Micro Studio	£16
Caverns	Arcana	£13
C: A Dabhand Guide	Dabs	VO £15
– with disc		£22
C Development System	Beebug	£77
Chameleon	4mation	£24
Charts & Graphs	Computer Tutorial Services	£17
Chess 3D	Micro Power	£14
Children's Graphics	Micro Studio	£16
Chocks Away	4th Dim	£17
– Compendium	4th Dim	£27
– Extra Missions	4th Dim	£14
Clip Art, spritefiles	Graphics Factory	£19
Clip Art Set 1, drawfiles	Midnight	£29
Clip Art Set 2, drawfiles	Midnight	£29
Coffee		£27
Colour Screen»Mac	Human	£90
– Arc/Mac Cable	Human	£24
Concept Designer	Longman	£22
Conqueror	Superior	£18
Control Panel	Lingenuity	£14
Converta-Key	Triple R	£16
Cops	Alpine	£15
Corruption	Magnetic	£18
Craftshop 1	4mation	£27
Craftshop 2	4mation	£27
Creator	Alpine	£31
Crisis	CIS	£15
Cross-32 Meta-Assembler	Baildon	£175
– manual for evaluation	Baildon	VO £15
DataVision	Silicon	£114
DataWord	Triple R	£16
Decorated Alphabet, drawfiles	Micro Studio	£17
Desktop Assembler Release 2	Acorn	£129
Desktop C Release 4	Acorn	£189
Desktop Folio	ESM	£82
Designer Intro	TechSoft	£75
Desktop Office	Minerva	£95
Desktop Publisher	Acorn	£108
– extra manual	Acorn	VO £10
DFS Reader	Beebug	£9
Disc Tree	Mitre	£37
DrawBender + Fonts	ICS	£12
– site licence	Midnight	£50
Dread Dragon Droom	Resource	£21
Dreamwave	EMR	£34
Drop Ship	4th Dim	£14
DTP Graphics 1 (Mono), draw	Micro Studio	£15
DTP Graphics 2 (Colour)	Micro Studio	£17
DTP Seeds	4mation	VO £8
Easiword	Minerva	£29
EasiWriter	Icon	£120
Einstein	Ace	£POA
Elite		£33

Title	Publisher	Price
EucliData (OCR)	Irlam	£155
– bought with Irlam Scanner		£79
Equasor	CC	£39
E-Type	4th Dim	£14
– Designer	4th Dim	£13
– Extra 100 Miles	4th Dim	£13
Euclid	Ace	£46
Family Favourites	Minerva	£15
Farmer Giles	Computer Tutorial Services	£16
Farmer Giles II	Computer Tutorial Services	£16
Film-Maker	Silicon	£78
Financial Accountant	Silicon	£203
Finding the Way, age 2-5	Rainbow	£7
Fine Racer	Eterna	£14
Fireball 2	CIS	£17
First Words and Pictures	Chalksoft	£19
Flexifile	Minerva	£98
Flight Path		£27
Flying Start II	Mitre	£86
Fontasy	ICS	£25
– site licence	ICS	£70
FontFX	Data Store	£9
– site licence	Data Store	£70
Font Pack – Newhall, Starter, Symbol – each pack	Acorn	£35
Font Pack 1 – Paladin, Swiss B, Symbol B, Vogue	Beebug	£47
Font Pack – Avant Garde, Bookman Pembroke – each pack	CC	£29
Fortran 77 Release 2	Acorn	£75
Fourier Analysis	Armadillo	£60
Freddy's Folly	Minerva	£13
Freddy Teddy	Topologika	£18
Freddy Teddy's Adventure	Topologika	£16
Fun School 2, age 2-6	Database	£16
Fun School 2, age 6-8	Database	£16
Fun School 2, age 8+	Database	£16
Fun School 3	Database	£POA
Gammaplot	Minerva	£35
Gate Array Design and Teaching	Silicon	£114
Genesis I	Oak	£40
Genesis II	Oak	£99
Genesis Plus	Oak	£69
– Script Language Manual	Oak	VO £16
GerberPlot	Silicon	£91
Giant Killer Maths Adventure	Topologika	£16
Giant Killer Support Disc	Topologika	£14
GraphBox	Minerva	£55
GraphBox Professional	Minerva	£POA
Graphic Writer	Clares	£24
Gumshoes	4th Dim	£18
Hard Disc Companion	Beebug	£33
Hearsay	Beebug	£52
Herewith the Clues!		£20
History Costume, spritefiles	Micro Studio	£16
Holed Out	4th Dim	£14
– Designer	4th Dim	£14
– Extra Courses 1	4th Dim	£13
– Extra Courses 2	4th Dim	£14
Home Accounts	Minerva	£36
Hostages	Superior	£14
Hotlink Presenter	Lingenuity	£40
House of Numbers	Chalksoft	£19
Hoverbod	Minerva	£13
Hyperbook Reader	Longman	£47
Hyperbook Electronic Library (including Reader)	Longman	£109
Ibix the Viking	Minerva	£14
I^2C SWI	Baildon	£15
– bought with Oddule	Baildon	£5
Impression 2.14 or latest	CC	£125
– network version		£650
– site licence		£545
– extra hardware key for sites		£15
– extra manual for sites		£8
Impression Junior	CC	£69
– site licence		£435
– extra manual for sites		£7
Inertia	4th Dim	£14
Instigator	Dabs	£39
Interdictor 2	Clares	£25
Investigator 2	Serial Port	£21
IronLord	UBISoft	£14
ISO Pascal Release 2	Acorn	£75
Jet Fighter	Minerva	£12
Jiglet	4mation	£25
Jigsaw	4mation	£27
Junior Database	Iota	£51
Keyboard Player	Chalksoft	£17
Knowledge Organiser	Clares	£42
Landmarks, Egypt/Rain Forest/Second World War/Victorians	Longman	£17
Lemmings	Krisalis	£21
Letters and Pictures	Chalksoft	£17

Title	Publisher	Price
Level 4 Fileserver	Acorn	£160
LISP	Acorn	£145
Little Red Riding Hood, age 5-8	Selective	£14
Logistix	Acorn	£77
Logo	Longman	£45
Maddingly Hall	Minerva	£12
Mad Professor Mariarti	Krisalis	£15
Magpie	Longman	£39
Mah-jong Patience	CIS	£15
Mailshot	Minerva	£29
Man at Arms	4th Dim	£14
Manchester United	Krisalis	£19
Maps and Landscapes 1	Chalksoft	£19
Maps and Landscapes 2	Chalksoft	£19
Mark Master	Chalksoft	£67
Master Break	Superior	£15
Masterfile II	Beebug	£19
Memory Magic	CIS	£14
Mental Maths	CIS	£16
MicroDrive Golf	CIS	£15
– Extra Courses	CIS	£13
Micro Trader Accounts	PRES	£199
MIG-29 Fulcrum	Domark	£28
Minotaur	Minerva	£13
Missile Control	Minerva	£13
Mogul	Ace	£15
Money Matters	Triple R	£16
Movaword	Chalksoft	£17
MultiFS	Arxe	£27
Multistore version II	Minerva	£192
Nevryon	4th Dim	£14
No Excuses	Arcana	£17
Nominal Ledger	Minerva	£78
Note Invaders	Chalksoft	£17
Numbers and Pictures	Chalksoft	£17
Numerator	Longman	£66
Numerator Chaos	Longman	£18
Oak Recorder	Oak	£28
Office Tools	Silicon	£276
Ollie Octopus Sketchpad		£13
Olympics	4th Dim	£14
Order Processing/Invoicing	Minerva	£78
Orion	Minerva	£13
Orrery	Spacetech	£85
Ovation	Beebug	£85
Overload	Clares	£13
Parametric Design Tool	Oak	£383
PC Access	Minerva	£30
PC Emulator 1.6	Acorn	£85
Pendown	Longman	£47
– Extra Outline Fonts	Longman	£16
Personal Accounts	Apricote	£24
Picture Book	Triple R	£16
Pinpoint	Longman	£95
PipeDream 3	Colton	£109
Pipe Mania		£18
Pirate	Chalksoft	£16
Plague Planet	Alpine	£13
Poster	4mation	£75
Powerband	4th Dim	£17
Prehistoric Animals, spritefiles	Micro Studio	£16
Premier	Circle	£71
– DataBase	Circle	£25
– Wordprocessor	Circle	£25
Presentation System	Silicon	£61
Presenter II	Lingenuity	£35
Presenter Story	Lingenuity	£145
PrimeArt	Minerva	£74
Printer Driver, RISC OS – Epson, Star colour	Beebug	£13
Printer Driver, RISC OS – JX (Epson, Star and Citizen colour)	Ace	£13
Printer Driver, RISC OS – PJ (HP Paintjet Colour)	Ace	£12
Pro Artisan	Clares	£70
Prolog X	Acorn	£145
Protext	Arnor	£114
Provocator	Computer Tutorial Services	£15
Puncman 1 and 2	Chalksoft	£16
Puncman 3 and 4	Chalksoft	£16
Puncman 5 to 7	Chalksoft	£17
Purchase Ledger	Minerva	£78
Pysanki	4th Dim	£15
Quazer	4th Dim	£9
QuicKey	ICS	£10
– site licence		£45
Realtime Solids Modeller	Silicon	£132
Real McCoy	4th Dim	£20
Real McCoy 2	4th Dim	£20
Red Shift	Minerva	£14
Render Bender I	Clares	£55
Render Bender II	Clares	£99
Reporter	Minerva	£29
Repton 3	Superior	£15
Return to Doom	Topologika	£16
Revelation	Longman	£54

Title	Publisher	Price
Reversals	Chalksoft	£17
Rhapsody 2	Clares	£45
RiscBASIC Compiler	Silicon	£112
RiscForth Compiler	Silicon	£110
Risc OS Companion Vol 1	Oak	VO £49
Risc OS Programmer's Reference Manual	Acorn	VO £80
Risc OS Style Guide	Acorn	VO £11
RiscType V2	CIS	£16
RoboLogo	Silicon	£69
Rotor	Arcana	£19
Sales Ledger	Minerva	£78
Saloon Cars	4th Dim	£18
Schema	Clares	£89
School Administrator	Minerva	£69
Scorewriter PMS		
Dot matrix	EMR	£127
PostScript	EMR	£425
ShareHolder	Silicon	£139
ShowPage	CC	£POA
Shylock Gnomes, age 10-15	Selective	£16
Sigma Sheet	Minerva	£38
smArt	4mation	£54
smArtFiler	4mation	£34
Snippet	4mation	£26
SolidCAD	Silicon	£115
SolidsRender	Silicon	£115
SolidTools	Silicon	£269
Spark	David Pilling	£5
Sparkle	Morley	£59
Speech!	Superior	£14
Spelling week-by-week	Chalksoft	£19
Splice	Ace	£22
Sporting Triangles	CDS	£20
Square Route	Cmptr Eyes	£16
Stock Management	Minerva	£78
Studio 24 Plus	EMR	£149
Super-Dump	Silicon	£20
Superior Golf	Superior	£15
Super-Plot	Silicon	£28
Supersound Creations	CIS	£15
System Delta Plus II	Minerva	£52
– Reference Manual	Minerva	VO £25
Tactic	Eterna	£15
Talisman	Minerva	£12
Target Maths	Triple R	£16
TechWriter	Icon	£245
Telling the Time, age 3-12	Rainbow	£7
Thundermonk	Minerva	£12
Timetabler	Minerva	£575
Timewatch	Mitre	£24
Tiny Logo + Tiny Draw	Topologika	£27
Toolkit Plus	Clares	£35
Tools Graphics, drawfiles	Micro Studio	£23
Touch Type	Iota	£40
Tower of Babel	Krisalis	£25
Tracer	Midnight	£46
Tracker	Serial	£37
Transport, drawfiles	Micro Studio	£25
Trivial Pursuit	Domark	£22
Turbo Type	CIS	£22
Tween	Ace	£22
Twin	Acorn	£24
Twin World	UBI Soft	£14
TWO (Task and Window Organiser)	ICS	£19
– site licence	ICS	£60
Typing Tutor	CIS	£17
U.I.M	4th Dim	£23
Utility Disc 1	Datastore	£13
Utility Disc 2	Datastore	£13
View»Mac 3	Human	£65
– Arc/Mac Cable	Human	£24
Vox Box	Clares	£50
White Magic	4th Dim	£15
White Magic 2 + Designer	4th Dim	£15
Wimp Game	4th Dim	£14
Wonderland	Virgin	£24
Words and Pictures	Chalksoft	£17
World Geography Maps, draw	Micro Studio	£23
WorldScape	Eclipse	£15
World Wildlife, spritefiles	Micro Studio	£16
Worra Battle	Oak	£13
WorraCAD	Oak	£75
Worra Plot	Oak	£24
Z88: A Dabhand Guide	Dabs	VO £15
Z88 PipeDream Guide	Dabs	VO £15
Zarch	Superior	£16
Zelanites	Micro Power	£18

AVAILABLE NOW





THE ONLY IDE PRODUCTS WITH A PROVEN TRACK RECORD



The number at the end of a product name is the formatted capacity in megabytes (rounded down). An L indicates a 1 inch high disc: two of these may be fitted in the same cradle or external case, sharing the same controller card. An S indicates a 2½ inch wide disc mounted directly on the controller card.

OUR PRICES FOR 'UPGRADES' INCLUDE THE *ideA* CONTROLLER CARD, A FAN WHERE NEEDED, AND EVERYTHING ELSE YOU WILL REQUIRE.

Our A310 internal upgrades need no backplane, so you may save over £60! If you do use one it must be a four-layer type.

ALL OF OUR IDE DRIVES ARE *AVAILABLE NOW*, AND ARE BACKED BY A YEAR'S EXPERIENCE IN SELLING IDE PRODUCTS.

PLEASE CALL IF YOU HAVE ANY QUERIES.

COMPLETE UPGRADES

A300/400/500 internal upgrades	
IDEARCIN20S ("hard card")	£475
IDEARCIN40	£269
IDEARCIN40L	£309
IDEARCIN80L	£389
IDEARCIN120L	£549
IDEARCIN200	£839
A300/400/500 external upgrades (May also be fitted to A3000 external expansion slot using a podule case or racking system)	
IDEARCEX40	£395
IDEARCEX40L	£449
IDEARCEX80L	£499
IDEARCEX120L	£699
IDEARCEX200	£935
A3000 Fully internal upgrades	
IDEA3IN20	£375
IDEA3IN40	£575
IDEA3IN60	£775
Fitting if required	£35
A3000 External upgrades (External drive using internal expansion slot; can combine with PRES Disc Buffer Board)	
IDEA3EX40 etc – prices as IDEARCEX40 etc + £10	

SEPARATES

Additional hard discs	
IDEA40L 40Mb	£219
IDEA80L 80Mb	£309
IDEA120L 120Mb	£459
A3000 accessories	
IC PLINTH (The best monitor stand)	£18
***ideA* cards and accessories** (For use with your own IDE hard discs; we can only accept responsibility for performance with discs we have tested ourselves)	
IDEARCIN Archimedes Internal	£110
IDEARCEX Arc External	£140
IDEA3EX A3000 External	£140
Internal hard disc cradle kit	£15
Fan kit (Standard)	£12
Case + power supply & fan	£125
Fan kit (A3000 Internal)	£15
Cable for second hard disc	£5
Recommended for backing up	
Beebug Hard Disc Companion	£35
Recommended for an easier life	
ICS Task & Window Organiser	£19

HARDWARE PRODUCTS

PRINTERS		
ArcLaser	*Calligraph*	£895
ArcServer	*Calligraph*	£985
Bubble Jet BJ-10e	*Canon*	£205
Bubble Jet BJ-300	*Canon*	£360
Bubble Jet BJ-330	*Canon*	£405
Laser Direct Qume	*CC*	£856
Laser Direct LBP-4 Card	*CC*	£323
Laser Direct LBP-8	*CC*	£1280
– new toner cartridge		£65
LBP-4	Canon	£660
Archimedes parallel printer cable		£8
FUNCTION KEY STRIP ORGANISER		
Arckey	*ICS*	V0 £3
– quantity of 4		V0 £10
MEMORY, ARM3 ETC		
Fitting extra unless stated † Fitting is straightforward ‡ Fitting requires expertise		
A3000 2 Mb Non-upgradable †	*IFEL*	£55
A3000 2 Mb Upgradable †	*IFEL*	£63
A3000 4 Mb †	*IFEL*	£149
A310 2 Mb Upgradable inc MEMC1a ‡	*IFEL*	£99
A310 4 Mb Solder-in inc MEMC1a ‡	*IFEL*	£POA
ARM3 ‡		£400
4-slot 4-layer Backplane	*IFEL*	£59
A310 RISC OS Carrier Board ‡	*IFEL*	£25
A300/400 Fan kit	*ICS*	£12
Fan filters (set of 10)	*ICS*	£4
Whisper Fan Quietener	*ICS*	£15
MICE, MONITORS		
Clares Micro Mouse	*Clares*	£26
9060S	*Eizo*	£450
9070S	*Eizo*	£640
SCANNERS, DIGITISERS		
ArcScanner including Epson GT-4000	*Clares*	£1660
FaxScan	*Spacetech*	£94
FX9600AT +Maintenance	*Amstrad*	£376
Hawk V9	*Wild Vision*	£330
– A3000 version	*Wild Vision*	£390
Image (colour)	*Irlam*	£589
i-Scan 200	*Irlam*	£539
i-Scan 400	*Irlam*	£589
Scan-Light A4	*CC*	£346
– with Sheet Feeder	*CC*	£431
Scan-Light Junior	*CC*	£174
– A3000 internal	*CC*	£174
Scan-Light Junior 256	*CC*	£205
– A3000 internal	*CC*	£205
ODDULES		
AnDi	*Baildon*	£49
I^2C SWI	*Baildon*	£15
– bought with Oddules		£5
Oddule Adaptor (needed with your first Oddule unless you have an I^2C socket)	*Baildon*	£10
KEYBOARD COVERS		
Seal 'n Type (spill-proof)		
– Archimedes	*Kador*	£14
– A3000	*Kador*	£14

NEW A5000, CALL FOR DETAILS!

HOW TO ORDER

VAT, UK customers please add 17.5% to the total price, except for the zero-rated items marked V0. Our VAT number is 384 3312 56.

***CARRIAGE IS FREE WITHIN MAINLAND UK IF YOU PAY ON ORDERING.* Please remember this when you compare prices!**

Overseas carriage: Add £6 (Europe) or at least £12 (elsewhere) for each software item if paying by pounds sterling bank draft payable in England, or Eurocheques not exceeding £100 each. If you are paying by credit card we will add airmail and insurance at cost. (Add £10 + 1% of the total price if you can only pay in your own currency).

Credit cards are welcome. We do not charge your account until your order has been fulfilled. The name and address for delivery of goods must be as known to the credit card company. If you are leaving an order on our answering machine include your telephone number, the expiry date of your card, and your calculation of the total payment due.

Official orders are welcome. Payment is due in 14 days. Invoices are subject to carriage and late payment charges.

Site licences: please enquire if no price is shown.

All products, prices and specifications are offered in good faith and are subject to change without notice. Your order will receive our attention immediately, but suppliers sometimes keep us waiting.

Goods are guaranteed but we do not supply them on approval.

Ian Copestake Software, Dept. ACU24
10 Frost drive, WIRRAL, Merseyside, L61 4XL
Tel: 051-632 1234 Fax: 051-632 3434

E&OE S039 91SE29

Special Offers!

for one month only
FREE!
with your subscription

RISC User Volume 3 Special Disc

• Watchdog Anti-Virus • Sticky Backdrop • Application Shell Generator • Encode • CMOS RAM Manager • Ovation Clip Art • Amaze • Wimp Basic Editor • Keystrip Generator • Advanced Desktop Presentation Creator • Maestro Music Files

RISC USER

Highly Professional Magazine
Supporting Magazine Disc
Quality Software
Technical Backup

The most popular subscription magazine devoted solely to the Archimedes range of computers including the A3000.

RISC User offers 10 magazines a year which typically contain:

News on the world of Archimedes
Reviews of the latest products
Ready to run applications
Utilities, routines and advanced programming techniques
Programs and articles on sound and graphics
Series of articles for all spheres of interest:

- 'Into the Arc' — tutorial series for beginners
- 'Mastering the Wimp' — series on Wimp programming
- 'Under the Lid' — hardware series
- 'Assembler Workshop' — all about ARM Assembler
- 'Beginning 'C' — series on C language
- 'DTP/WP' — advice on using commercial software
- 'Arcade' — a round-up of the latest games

Hints and tips
Postbag for your letters and answers to your questions
Technical queries and expert answers

Magazine discs, containing all programs published in the magazine plus some additional items, are available to order or on subscription.

The magazine and support group exclusively for users of the Archimedes



BEEBUG

The ONLY significant magazine still dedicated entirely to users of the BBC Model B and Master series.

BEEBUG General Utilities Disc

• Sprite Editor/Animator • Printer Buffer • Mode 7 Screen Editor • Epson Character Definer • ROM Filing System Generator • Multi-Column Printing • ROM Controller • Multi-Character Printer Driver for View • BEEBUG Mini Wimp

FREE
when you subscribe to BEEBUG Magazine

In April, BEEBUG commences its 10th year of publication, providing professional, useful and interesting information to thousands of subscribers. Each magazine offers:

A variety of useful programs to type in, or run from disc:

- Stand-alone applications
- Handy utilities and useful routines
- Entertaining games

News from the BBC world
Reviews of new products, and comparative surveys
Series covering a range of interests:

- 'First Course' series for beginners
- 'Workshop' for the more advanced programmer
- '512 Forum' for users of the Master 512
- 'Practical Assembler' for Assembly language programmers
- 'BEEBUG Education'

Informative articles
Hints and tips
Postbag for your letters and answers to your questions and lots more

All programs published in the magazine are available on disc, to order or on subscription.

10 years of publication

With your subscription you will receive not only 10 magazines a year, but you will benefit from a professional organisation with 9 years of experience in software, hardware, computing publications and support.

- Showroom with friendly professional staff, where you can try out the latest software and hardware
- BEEBUG's own quality software and hardware, with special discounts for magazine subscribers
- A large range of other products, and a Retail catalogue mailed free to magazine subscribers
- Speedy mail-order service
- Workshop repairs by qualified staff
- Trade-in service to upgrade your equipment

Order Form

I would like to subscribe to **RISC User Magazine** starting with the November issue, and receive in addition the *RISC User Volume 3 Special Disc* Free ☐

I would like to subscribe to **BEEBUG Magazine** starting with the November issue, and receive in addition the *BEEBUG Utilities Disc* Free ☐
(please indicate whether you want 5.25"or 3.5" disc)

RISC User/BEEBUG Subscription Rates (1 year): £19.90 UK, BFPO, Ch.I, £29 Europe+Eire, £35 Middle East, £38 Americas+Africa, £41 Elsewhere
Joint Subscription RISC User and BEEBUG (1 year): £29 UK, BFPO, Ch.I, £43 Europe+Eire, £52 Middle East, £57 Americas+Africa, £61 Elsewhere

I enclose a cheque for £ ______ (all cheques must be in pounds sterling, drawn on a UK Bank) or, Please debit my Access/Visa account No.

Card Expiry Date ______ Signature ______

Name ______

Address ______

AN ______ Post Code ______

RISC developments Ltd
117 Hatfield Road, St. Albans, Herts AL1 4JS
Telephone: 0727 40303 Fax: 0727 860263



NEW MACHINE PREVIEW

A5000 – PC STYLING WITH RISC OS 3 AND THE SPEED OF ARM3

AS EXCLUSIVELY revealed in last month's *BBC Acorn User*, Acorn is launching a new PC-style machine with an enhanced operating system and Arm3 processor.

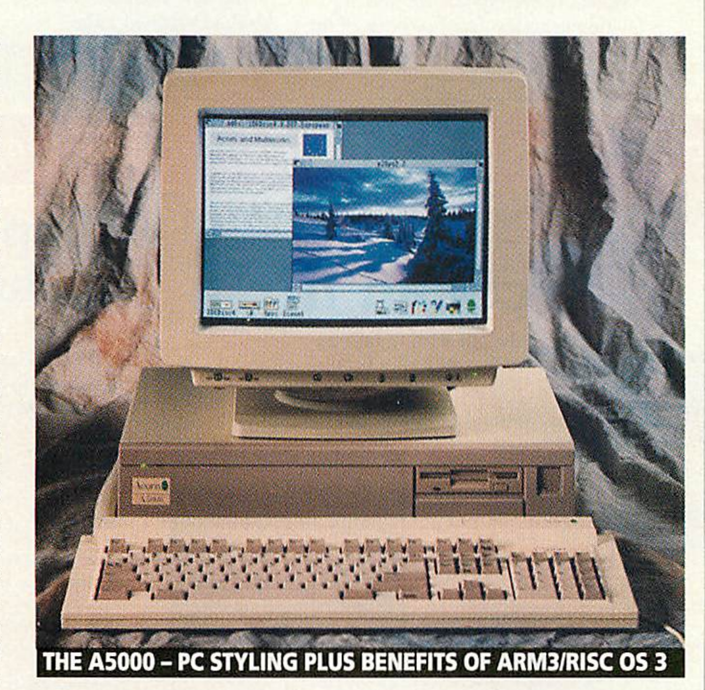
The Acorn 5000 features an enhanced version of Risc OS 2 – namely, Risc OS 3 – and a 'go faster' Arm3 processor (as found in the A540).

The new machine – which is a three box solution, including keyboard, base unit and monitor – is designed to complement the current range of Archimedes 32-bit Risc computers and fits between the 400 series and the top-of the-range A540. However, the A5000 will effectively replace the A440/1 in the current Archimedes range, although Acorn says that the A410 and 420 machines will be available 'for the foreseeable future'.

There are two versions of the A5000 – a 2Mb model with 40Mb hard disc costing £1,499 and a 1Mb base model (to be released later) costing £999. The price of the 2Mb model includes a newly designed PC/AT keyboard and Acorn 14in multiscan monitor.

The high speed of the Arm3 processor combines with a faster Ram access time than is found in the current A400 series to deliver a fast machine for such applications as desktop publishing.

The machine features a serial port, a centronics printer port and four Eurocard-sized expansion slots, permitting expansion at a lower cost than with other systems. The addition of PC storage devices or special interface cards allows the system to be customised to meet the user's needs.


THE A5000 – PC STYLING PLUS BENEFITS OF ARM3/RISC OS 3

The A5000's floppy disc drive can now handle up to 1.6Mb of information, which is double the existing 800K standard.

IBM PC discs can also be used and the operating system automatically adjusts to whichever format the disc is in, without the need for a separate software utility.

The machine also allows users to take full advantage of the cost effective IDE technology, now standard in personal computing, with the 2Mb system incorporating a fast 40Mb hard drive.

Acorn's intention in designing the machine was to make it more 'industry compatible'. Because the A5000 is fast, it can behave like different computers simultaneously. By using Acorn's *PC Emulator* software, data from, say a Dos spreadsheet or database can be combined into a business report running under the Risc OS desktop, thereby taking advantage of the A5000's graphics and range of saleable fonts. With X software, the A5000 can be an X terminal, accessing open systems.

With networking options and TCP/IP protocol, the A5000 communicates easily with other computers using standard Ethernet and Econet.

Acorn's marketing director, Mike O'Riordan, said: 'The new A5000 now joins Acorn's family of Archimedes computers. Performance for its own sake is not the question, it is how it is delivered to your desktop that is the key. With the A5000 and Risc OS 3, the power of the Arm processor can be utilised.'

SPECIFICATIONS

Below is an at-a-glance guide to the specifications of the A5000.

- **PROCESSOR**
Arm3, 25MHz, 4K cache
- **STANDARD MEMORY**
1 or 2Mb, upgradable to 4Mb
- **HARD DISC DRIVE**
Optional 40Mb 3.5in form factor PC/AT interface (IDE)
- **FLOPPY DISC DRIVE**
3.5in form factor
- **FORMATS SUPPORTED**
720Kb Dos
1.44Mb Dos
800Kb ADFS E
800Kb ADFS D
1.6Mb ADFS F
- **INTERFACES**
Parallel centronics
RS232C serial
Four single-width Eurocard expansion slots
- **MONITOR OPTIONS**
Broadcast, Scart TV, multi-frequency, VGA
- **GRAPHICS RESOLUTION**
PAL TV scan rate
(640 x 256 pixel) 256 colours
VGA
(640 x 480 pixel) 16 colours
VGA+
(640 x 480 pixel) 256 colours
- **STEREO SOUND OUTPUT**
Via 3.5mm stereo jack
- **NETWORKING**
Econet module required
Ethernet expansion cards supported
- **DIMENSIONS**
100H x 430W x 340D (mm)
- **WEIGHT**
16Kg
- **KEYBOARD**
103 key, enhanced industry standard layout
Detachable coiled 1.5m cable
- **EXPANSION CARD OPTIONS**
SCSI, MIDI, IEEE 488, STE bus controller, video frame grabbers, sound samplers, transputer boards
- **PRINTERS**
Risc OS printer drivers include: Apple Laserwriter, PostScript, HP Laserjet, Canon/Integrex 132 colour, dot-matrix Epson compatibles
- **NOMINAL DC POWER**
70W max (continuous)
76W max (surge)
- **WARRANTY**
12 months
- **PRICE**
£1499 (2Mb model)

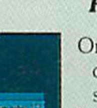
FOR MORE INFORMATION ON THE A5000 TURN TO PAGE 9 >>>>>

New from RISC Developments (BEEBUG's R&D operation)

DeskEdit

An advanced all-purpose multi-tasking Text Editor for the Archimedes, with special features tailored for use with plain text, Basic and C source.

General editing features

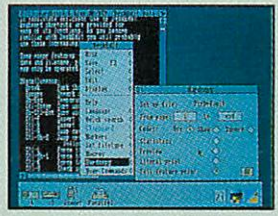


- Three special Find and Replace modes - from Simple to Power Search
- Additional Quick-Search mode for rapid retrieval
- Text macros to insert user strings in both text and source code
- Special Undelete buffer for moving text around, in addition to Edit-style Undo/Redo
- Dedicated markers and position finders for finding your way around large files.
- Clipboard, providing an alternative way to move text around

Plus

- On screen Help - full documentation in a scrollable window
- Instant file info feature, and current directory setter
- Caret flash controller for DeskEdit and other applications
- Customised user commands to open directories, run other applications and launch Obey files
- Numerous keyboard shortcuts including date and filename insertion, changing case, moving windows to the front or back of the stack, parking the mouse pointer, inserting printer codes etc.

Printout



- Fast text printout including style codes for bold, underline, italics, page breaks etc.
- Special text printing options with headers, footers, page numbering and style codes.
- Useful Preview mode.
- A Statistics option with a summary of aspects of the text to be printed.

Language specific features:

- DeskEdit will format word-wrapped **plain text** as you type.
- **Basic files** will automatically be detokenised, when you drag them to the icon, and loaded into DeskEdit ready for editing. F3 will retokenise and save them after editing.
- Function and Procedure browser.
- Automatic line number insertion.
- Special **C language** features.
- Auto indent facility combined with automatic generation of opening braces streamlines source code entry.
- C function browser and synthax checker

Other Archimedes Products from RISC Developments

A selection of 12 multi-tasking

Desktop Applications

- **DataSheet** - data presentation package for creating annotated graphs.
- **Calc_570** - an implementation of a scientific calculator.
- **CharDes** - character designer for creating new system fonts.
- **Diary** - a Desktop diary and calendar.
- **B_to_T** allows Basic programs to be edited without leaving the Desktop.
- **FileFind** performs a hierarchical search for a given file, application or directory.
- **SetType** - change the filetype of any file by dragging it to the icon bar.
- **HotKeys** - allows single key presses to perform a wide range of functions.
- **Mouse** - change the mouse speed merely by clicking on an icon.
- **Print** allows files to be printed just by dragging them to the icon bar.
- **NotePad** for up to eight pages of jottings.
- **Dustbin** - sits on the icon bar and allows files to be deleted by simply dragging them to its icon.

ArcOmnibus

7 Original Archimedes Games



- **Amaze** - a graphically superb sliding block game with a difference.
- **Cribbage** - an excellent implementation of the well known card game.
- **Moric** - a colourful 'ladders and levels' game.
- **Ogre's Lair** - a highly entertaining arcade type game, providing hours of fun.
- **Pick a Pair** - a colourful game testing your skills of observation and memory.
- **BalloonMan** - burst the balloon - a Pacman style of game.
- **Dominoes** - a Desktop version of the classic

An all-purpose reference finder for books, magazines and manuals

ArcScan III

Contains the following Databases:

- RISC User Volumes 1 - 4 • BEEBUG Volumes 1 - 9
- Index to RISC OS Programmer's Reference Manual
- Index to ANSI C Manual (Release 3)
- Index to BBC Basic Guide • Index to RISC OS User Guide

ArcScan III features:

- flexible keyboard search on any entry
- dynamic memory management
- improved search logic - choice of 3 logical operators: OR, AND and NOT
- dedicated ARM code routines enabling rapid information retrieval
- fast scrolling Wimp window displaying finds
- detailed manual and extensive on-screen help
- new extended wildcard option
- fully user customisable

ArcScan Library Disc

Offers an index for Acorn User and Micro User magazines from January 1987 to date.

The Library Disc will be regularly updated to include the latest issues, and upgrades will be available for £4.45. As a **Special Offer** you can purchase an ArcScan Library disc with vouchers for two upgrades for the price of £16.95.

File Handling for All

by David Spencer and Mike Williams

File Handling for All is a comprehensive book which covers all the requirements of data storage and processing by computer, using the popular BBC Basic programming language for the examples. It is aimed at anybody interested in File Handling and Databases, whether beginners or more advanced users, and will appeal to all who want to learn more of this important subject.

The book starts with an introduction to the rudiments of file handling, and in the following chapters develops an in-depth look at the different types of files e.g. serial files, indexed files, direct access files, and searching and sorting. A separate chapter is devoted to hierarchical and relational database design, and the book concludes with practical advice on developing file handling programs.

The associated disc (£4.75) contains complete working programs based on the routines described in the book and a copy of Filer, a full-feature Database program.

Wimp Programmer's Toolkit

Twelve powerful multi-tasking utilities - an essential aid to any programmer

- **Wimp Debugger** - debug Wimp-based programs while testing and running them.
- **Spyglass** - displays the contents of memory allocated to any task currently running.
- **Template Editor** - Acorn's FormEd for designing windows.
- **Template File Browser**- view the contents of a template file.
- **Application Shell Generator** utility for creating application directories, Obey files and their sprites.
- **Menu Editor** for creating and editing Wimp menu structures.
- **WimpAid** allows pointer, window and icon parameters to be dynamically displayed on screen.
- **Iconbar Shell Generator** - create simple multi-tasking programs
- **Desktop File Loader** allows you to load a program from the Desktop, rather than run it.
- **Icon Flag Generator** calculates the value of icon flags.
- **Wimp Message Monitor** - monitors the Wimp polling system.
- **EasyWimp** provides a ready-made Wimp application shell to be used for creation of single-window applications.

Order form

DeskEdit	**£24.95**	Stock Code **PEDTa**	☐
Wimp Programmer's Toolkit	**£19.95**	Stock Code **PWPTa**	☐
Arcscan III	**£18.95**	Stock Code **PAS3a**	☐
Arcscan Library Disc	**£ 9.95**	Stock Code **PAL1a**	☐
Desktop Applications	**£14.90**	Stock Code **PDA1a**	☐
ArcOmnibus Games	**£14.90**	Stock Code **PAOMa**	☐
File Handling for All	**£ 9.95**	Stock Code **BKO2b**	☐
Disc supporting the book	**£ 4.75**	Stock Code **BKO3a**	☐

*Please add p&p: **a:** £1-UK, £2-Europe and £2.60 elsewhere: **b:** £2-UK, £3-Europe and £5.50 elsewhere*

I enclose a cheque for £__________

(all cheques must be in pounds sterling, drawn on a UK bank) or, please debit my Access/Visa account No.

Card Expiry Date ____/____ Signature __________

Name __________

Address __________

AN __________ Post Code __________



117 Hatfield Road, St. Albans, Herts AL1 4JS Tel. (0727) 40303 Fax. (0727) 860263



MORE POWERFUL RISC OS 3 AT HEART OF NEW A5000

THE NEW version of Acorn's Risc operating system, Risc OS 3, which is included with the new A5000, features around 300 key enhancements over previous releases.

Improvements are designed to provide increased functionality for the user, as well as additional programming interfaces for software developers.

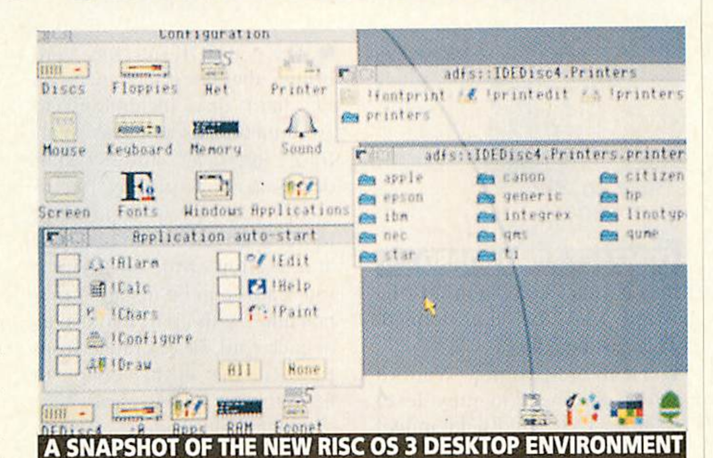
There are a number of key changes incorporated into the new operating system, including:

● Multi-tasking filer operations, allowing the computer to be used while filing operations (copying, moving, deleting, etc) take place.

● Improved versions of the main applications, such as *Edit*, *Paint* and *Draw*, as well as 12 commonly used font styles and the outline font manager, are now in Rom, releasing up to 150Kb of extra user work space.

● Automatic start-up of the Rom applications when the computer is switched on.

● No limit to the number of windows that can be opened at the same time. They can be moved partly off screen to increase space.



A SNAPSHOT OF THE NEW RISC OS 3 DESKTOP ENVIRONMENT

● Desktop saving, enabling you to save the computer's state and restore it when you next use the machine.

● Iconised windows, which enable an open window to be shrunk to the size of an icon and stored on the desktop background.

● Improved printer support via a new printer driver manager, making it possible to have more than one printer connected at the same time, with all connected printers accessible from the desktop.

● MS-Dos format discs can be read and data can be moved between the A5000 and any computer running MS-Dos.

● Broadcast loading on Econet networks, improving the speed at which data is loaded on multiple computers.

● Up to 128 tasks running together. This compares with just 32 allowed by the current Risc OS 2.

● Extension modules are now in Rom.

● Icon bar grouping.

● New hot keys which can open a task window, move the icon bar to the front and initiate shutdown.

● A screen blanker which helps preserve the monitor screen.

RISC OS 2 – WILL IT BECOME REDUNDANT?

ACORN has undoubtedly taken a step forward with its new operating system, Risc OS 3. But how will that affect users of machines currently running Risc OS 2? Will software continue to be produced for them? And will they be able to upgrade their machines to the new operating system, assuming they do not want to buy the new A5000?

According to Acorn, Risc OS 3 will be available only on the A5000, at least initially. However, an upgrade from Risc OS 2 to Risc OS 3 will be available, but this is unlikely to be until Spring next year. The ease of fitting new Roms and the cost of doing so have yet to be confirmed.

Meanwhile, indpendent software vendors (ISVs) have already started to develop new software (or versions of current software) for the new operating system. Charles Moir of Computer Concepts, which produces *Impression 2* desktop publishing software, confirmed that the company would be producing versions of current software for Risc OS 3, while continuing to support Risc OS 2 users. He also expected to take a two-version approach to new software development because of the sizeable Risc OS 2 user base.

NEW VERSIONS OF LEARNING CURVE

TWO NEW Learning Curve packages, featuring the A3000 and the new A5000 respectively, are being launched.

Both packs include *1st Word Plus*, *Genesis Plus* and a number of games, including *Pacmania*. Also included with the A5000 LC is Acorn's *Desktop Publishing* and *PC Emulator* software. A new magazine, *Home Computing with the Learning Curve*, is also included.

The A5000 LC costs £1,799 with a multi-scan monitor and the A3000 LC costs £999 with an RGB monitor.

● **STOP PRESS** A new Acorn inkjet printer, the JP150, will be bundled with the new Learning Curve package.

APPLICATIONS

THE COMBINATION of the A5000 and enhanced Risc OS 3 operating system provides a number of useful applications, many of which have not been available before. Here is a breakdown.

● **ROM-BASED APPLICATIONS**
Paint – pixel editor
Edit – fully featured text editor
Draw – drawing package
Alarm – set to meet appointments
Calc – calculator
Chars – displays character for new fonts
Configure – machine configuration
Help – interactive help system

● **DISC-BASED APPLICATIONS**
Pinboard – files, applications, etc can be attached to the desktop
Printeredit – control common printers or save your own driver
Fontprint – allows Risc OS fonts to be used on PostScript printers
Scicalc – scientific calculator
Puzzle – sliding block puzzle
65host – latest version
65tube – emulates 6502 second processor
Clock – analogue clockface
Mailman – for sending/receiving electronic mail
Maestro – includes new tunes and print score facility
Patience – that game!
Tinydirs – for keeping directories on the icon bar
Lander – hover ship game
Madness – novelty toy
Magnifier – magnifies the screen
New printer drivers – support for rational, simultaneous drivers

● **CHANGES TO CONFIGURE**
The Configure application has been redesigned to give more control over the computer's configuration. It provides control over:

★ The number of hard and floppy disc drives connected to the computer
★ The settings related to use of the Econet network
★ The default port to be used for printing not done via Risc OS 3 printer drivers
★ Mouse sensitivity and speed
★ The different aspects of the keyboard
★ Default memory allocations
★ The computer's sound system
★ The screen display options
★ Thresholds used by the font manager
★ The window manager options
★ The Rom applications which are started automatically.



WATFORD ARM3 UPGRADE BOARD IS LESS THAN £200

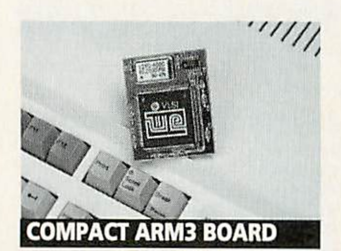
A SUB-£200 Arm3 upgrade for the Archimedes/BBC A3000 is just one of the new products due to be launched at the *BBC Acorn User* Show by Watford Electronics.

Other new Watford products range from a colour scanner to an infra-red cordless mouse.

● The Arm3 MkII upgrade is designed to replace the Arm2 processor in the A3000/Archimedes and increases operating speed by between two and five times, depending on the application in use.

Measuring 44 × 53mm, it stands just 6mm above the original Arm2 socket. A purpose-made, 84-way gold-plated connector ensures that firm contact is made with the chip socket.

A special tool is included for DIY fitting, or Watford can arrange for your machine to be picked up and returned after installation. The support software provided on disc includes a CacheKey module and a desktop application to control


COMPACT ARM3 BOARD

the Arm3. Activation of the Arm3 may be user-defined. The cost is £199.

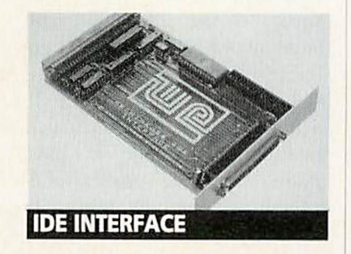
● There are two new Watford scanners. The 256 grey level scanner is a hand-held model offering between 100 and 400dpi. Grey levels per dot range from 4 to 256 and there are also three monochrome modes, black and white and two dither patterns. Scanning speed is 3ms per line.

The hand-held 105mm colour scanner offers 12-bit colour per dot, 200 dpi resolution and a scanning speed of 3.5ms per line. A postcard can be read in 11.5sec with 4096 colours at 400dpi.

The cost of both scanners has yet to be confirmed.

● The new IDE interface card brings the latest advances in PC hard disc technology to Archimedes users. The Watford interface allows IDE drives to work on any Archimedes and speeds equivalent to SCSI drives can be obtained at a fraction of the cost. Up to four cards can be installed in a machine, with up to two drives to each card. Prices range from £249 for the 44Mb version to £535 for the 200Mb card.

Other new products include an A3000 user I/O internal expansion card (£42), an Aries AlphaScan monitor (£325), a VIDC enhancer board (£45) and an infra-red cordless mouse. Contact Watford Electronics on (0923) 37774.


IDE INTERFACE

NEW LASER PRINTER AND SCANNER

COMPUTER CONCEPTS has announced a new 600dpi laser printer for less than £1000.

The LaserDirect HiRes4 is based on the Canon LBP4 and is offered complete with expansion board and software at the reduced price of £999 – one-third less than the cost of its nearest equivalent, says CC.

The complete system consists of: the LBP4 printer with video interface and expansion board; the latest LaserDirect software offering Epson emulation and 128 grey level printing; the fastest printer drivers available for the Archimedes; Econet and Nexus network compatible options; serial and parallel interfaces; 300 and 600dpi printing resolutions; and one year on-site maintenance.

Also released is a new SCSI-based flatbed scanner offering 300dpi 256 grey scale scanning. The ScanLight Professional fills the gap in the top end of the Archimedes market and retails for £899.

For further details, you can contact Computer Concepts on (0442) 63933.



LASERDIRECT HIRES4 600DPI LASER PRINTER

ELITE ON THE ARC

THE GAME that started life on an Acorn Atom and went on to become *the* mega-selling BBC micro game is now available for the Archimedes/A3000, writes *Sam Greenhill*.

News broke a couple of months ago of the impending release of the Archimedes version of *Elite*, but the publisher has only just been announced.

Hybrid Technology, best known for its music products, is launching the game at the *BBC Acorn User* show. Hybrid was chosen because its members once worked for Acornsoft in helping to produce the original *Elite*.

Archimedes *Elite* will be sold for £39.95 and the packaging will include the game on one disc, the manual, the ship identification poster and, new for the Archimedes, a Galaxy One trading route guide outlining the safest and most dangerous trade paths.

The Dark Wheel novella will not feature, but Hybrid is hoping to include an 'add-on dashboard' – a fold-out cardboard extension which fits on to the front of the monitor and should enhance the realism of the game.

Turn to the Games Supplement in this issue for a preview of Archimedes *Elite* and see next month's issue for a full review.

A3000 VIDEOS

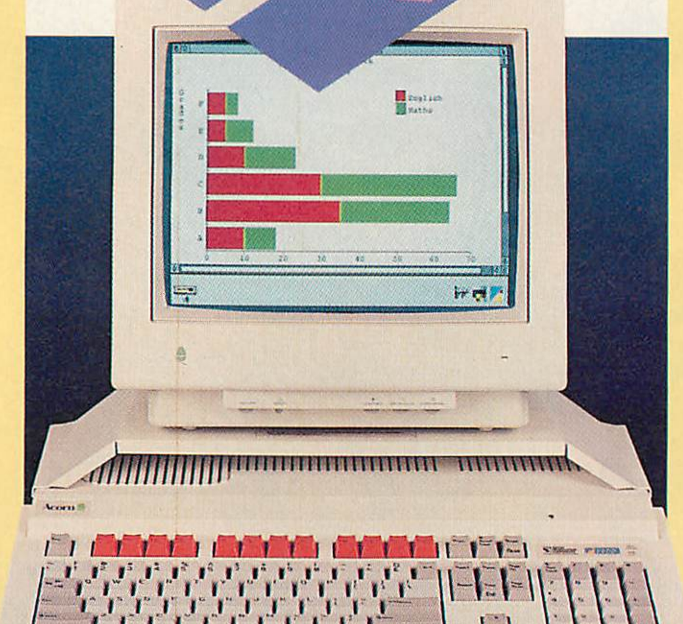
IF YOU have been waiting for video versions of our popular *First Steps* introductory series on the A3000/Archimedes, four new videos, offering a step-by-step guide to the machines and various applications, have just been released by London-based company, Pedigree Films.

The titles include *Up and running*, *Text Processing*, *Data handling* and *Art and graphics*. The videos cost £14.99 each from: Pedigree Films, Trinity Business Centre, 305 Rotherhithe Street, London SE16 1EY. Tel: 071-231 8271.

presenter GTi



THE PRINCIPLES OF PRESENTER TAKEN TO NEW HEIGHTS



Following extensive research amongst Presenter II and Hotlink Presenter users, Lingenuity is delighted to introduce Presenter GTi.

Generating a vast range of graphs and charts has never been easier. Data is entered and edited via a simple worksheet, and all graphs can be saved as genuine draw files and/or transferred into other applications.

Presenter GTi's Hotlink option gives the user the ability to communicate with other applications such as Pipedream 3 - allowing relevant data to be updated continuously for the displayed graph.

EXISTING PRESENTER FEATURES:

- Bar, Line & Pie charts
- 3-Dimensional displays
- Auto scaling
- Fast Hotlink transfer
- User definable layouts
- Full colour or monochrome graphs
- Supports CSV file format for loading and saving data

NEW GTi FEATURES:

- Multiple Pie chart display
- Logarithmic axis scaling
- Regression line (Line-of-Best-Fit) data available: Constant, Gradient, t ratio, Residual value, R^2
- Function key short cuts
- Zoom option for graph display
- Multiple document capability
- Multiple view option
  - File Information box
  - Instant display of saved graphs

ENHANCED GTi FEATURES:

- Wider range of Graph types:-
  - 8 different types of Bar charts
  - 4 different types of Line charts
  - 3 different types of Pie charts
  - Scattergrams
  - 2 different types of area chart
- Dynamic worksheet area.
- Comprehensive file information
- Auto Label/Data detection
- Easier-to-use data entry window
- Increased display options for all graphs
- Faster draw and screen update routines
- Grids available for all graphs
- Data point symbols - selectable
- Line patterns - selectable



Presenter GTi conforms fully to RISC OS guidelines **and has been designed to be part of your essential productivity tool software library.**

PRESENTER GTi - £69.95 (UPGRADE FROM PRESENTER - £30)

OFFICIAL EDUCATION ORDER - £62.95 SITE LICENCE - £170 + £5 PER COMPUTER (UPGRADE SITE LICENCE FROM PRESENTER - £50)

PRICES DO NOT INCLUDE VAT. (POSTAGE - £1.50 EXTRA)

NEW · NEW · NEW · NEW



SEE US ON STAND NO. 55

LINGENUITY PROFESSIONAL

WOOD FARM LINSTEAD MAGNA HALESWORTH SUFFOLK IP19 0DU
TEL: 098 685 477 FAX: 098 685 460



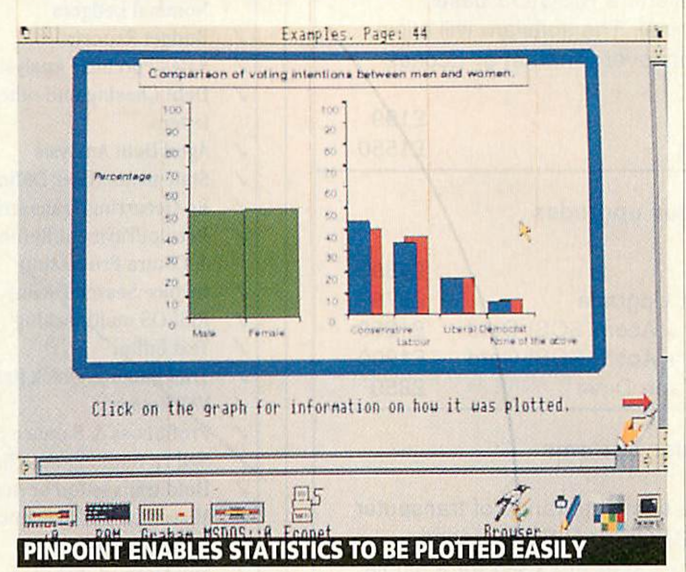


ACCURATE PINPOINTING

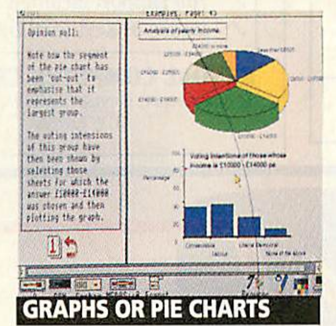
LONGMAN LOGOTRON has just released what has been described as a 'new generation database where handling is as easy as in DTP'.

Pinpoint for the BBC A3000/Archimedes places the emphasis very much on the collection of information and its analysis. Among other functions it provides:

- DTP-style facilities which allow the user to create and publish any sort of data form, from single to multiple pages
- A WYSIWYG data entry facility, where data can be quickly entered directly onto the form using the mouse or the keyboard
- A table browser, which allows the sorting and selection of information, the calculation of statistics and the export of collected data
- A graphic analysis workbench, enabling information to be analysed using a wide range of chart and graph types
- A graphics presentation editor, allowing graphs and charts to be combined with text frames, sprites and draw files.



PINPOINT ENABLES STATISTICS TO BE PLOTTED EASILY


GRAPHS OR PIE CHARTS

Presentations can be saved and printed, as well as exported into a wide variety of other Risc OS applications. *Pinpoint* for the A3000/Archimedes costs £99.

● Longman Logotron has recently moved to new premises, which are at 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS. Tel: (0223) 425558.

NEWS IN BRIEF

● **A NEW** low-cost touchscreen for the Archimedes has just been announced by Hybrid Technology. The Access 2000 Touchscreen costs £188, making it attractive to primary schools, and works on a standard A3000. Because it connects via Hybrid's AccessLink – the interface that daisy-chains multiple add-ons via the printer port – it avoids the need for a serial port upgrade. Contact Hybrid Technology on (0223) 861522.

● **HITACHI** New Media has joined forces with Acorn to sponsor a free demonstration CD-Rom disc. It contains numerous audio utilities, 300Mb of demonstration software, 32-bit images and utilities, oh, and the full text of the Bible. Hitachi will be mailing the disc, designed to promote the company's CD-Rom drives, to all LEAs, secondary schools and further education establishments. Contact Hitachi New Media on 081-849 2092.

● **HS SOFTWARE** has released its latest *Fun & Games* compilation for the A3000/Archimedes. Included are: *Coconuts*, where you help a character pick the right fruits from tropical trees; *Burger Boy*, where you make up orders in a burger bar; and *Tidy*, where you help a character called Emma tidy her bedroom. The package costs £19.95. Contact HS Software on (0792) 204519.

● **CARVIC** has launched an enhanced version of *DrawAid*, the package that allows Basic programmers to produce *Draw* files directly from their own programs. The standard procedures supplied allow complex and precise drawings to be produced without any knowledge of the detailed structure of *Draw* files and the utility complements the Acorn-supplied *Draw* application.

Drawings of any basic mathematical expression can be produced and they are compatible with DTP applications using standard *Draw* files. The package costs £10 and is available from Carvic Manufacturing, Moray Park, Findhorn Road, Forres, Moray, Scotland IV36 OTP. Tel: (0309) 72793.

● **THE BIG BEN** Club is holding its ninth annual open day on October 26. The venue is at Community-Centre de Kiekmure, Tesselschadelaan 1, at Harderwijk, 40kms NE of Utrecht, off the A28 motorway on the borders of the old Zuyderzee.

LOGGING ONTO BEEB BB

ACCESSING a bulletin board will give pupils at key stages 3 and 4 a hands-on opportunity to experience acquiring and communicating information, writes *David Watkins*, BBC Education Officer.

Schools do not need to subscribe to use a bulletin board, unlike the commercial services, such as Prestel and Campus 2000, and there are many boards located across the country. Most schools should be able to find one that will be suitable for their own particular needs, within their local telephone area.

The BBC Education bulletin board was initially set up to allow the transfer of files between regional offices, and spare capacity allowed it to be opened up for public access. Facilities include a public message area, a schools message area, and facilities for E-mail. London-based schools can access it for the cost of a local telephone call.

The BBC Education bulletin board runs on a TRS-80 model 4 with a 15Mb hard disc, rescued from the *Micro Live* office when that particular series ended, and is available 24 hours a day on 081-752 5990. The system operator is usually around during office hours if help is needed. It operates at a baud rate of 300/300 (v21) and the format is eight bits with no parity and 1 stopbit (8N1).

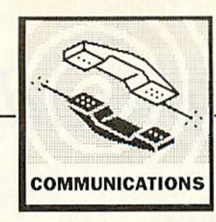
In terms of the National Curriculum, the use of E-mail supports reading and writing in English (AT2, AT3) and modern languages (AT3, AT4). It also directly addresses the communicating information strand of the Information Technology Orders at key stages 3 and 4.

MAGIC BUS

LINDIS, the Suffolk-based hardware and software supplier, has kitted out a double decker 'technology bus' to tour schools and colleges in the east of England.

The pink and blue bus has been equipped with the latest Acorn computer hardware, software and peripherals and is being used as a mobile demonstration and training centre. It is visiting user groups, exhibitions and businesses, and various educational establishments. Contact Lindis on (0986) 85476.





CHANGES AT BT

A NUMBER of changes are being made by British Telecom which will affect comms customers.

The first is that, as of September 2, reduced telephone rates for high usage mean that, according to BT, 'the more calls you make, the greater the savings'. When you spend over £117.50 per quarter on your telephone bills, you qualify for a 5 percent discount on future calls. These savings can go up to 8 percent when your bill reaches £293.75 per quarter.

It is a pity that BT cannot offer discounts to users with lower phone bills, instead of encouraging people to run up even higher bills, but those of you who do a lot of communicating may end up with reasonable savings.

The second major change is set for April 1994. As revealed in this column a few months ago, BT applied to add an extra digit to all telephone exchange numbers. Oftel has finally announced its decision to allow BT to add an extra 1 after the initial zero on all national dialing codes.

This will only affect calls made to places outside your local area, but will require communications software to distant BBs to be changed.

For further information on these changes, call free on 0800 800 873.

● **STOP PRESS** BT has decided to discontinue the Micronet service. It will close down at the end of this month.

Current subscribers (thought to number around 15,000) will be offered low cost-entry to Compuserve (the American-based network).

Watch out for further details in next month's *BAU*.

ANTI–HACKER DEVICE

IF YOU run a computer network and are worried about hackers gaining entry to your system, take a look at DAS 2 by Kerridge Network Systems. It consists of a single unit which sits between your modem and computer and only allows access in to specific coded systems.

Up to 400 users can be programmed in and multiple levels of security should help to ensure that any potential hackers are kept at bay.

As the unit is installed between the RS232 port and modem, it is not machine-dependent, so it should work with most computers.

● Speaking of hacking, this is a problem which crops up in many contacts I have with fellow comms enthusiasts. I'm always interested in your views, so do drop me a line.

BB OF THE MONTH

THIS month's featured bulletin board is run by Steve Pursey in London. It runs on a BBC using the popular *XFS+* host software. Catering for a wide range of interests and users, it has numerous specialities including a separate 'gateway' to another bulletin board and a wide range of downloads.

Special interest areas include music, showing the pop charts, For Sale and advertisement sections, as well as a comprehensive, on-line games section. Indeed, the range and variety of on-line games available is quite surprising and worth a look on its own. As well as simple games such as Noughts & Crosses and Hangman, there are no less than three full adventure games, a *Colditz* game, a *Business* game and *Eliza*. The latter is a popular classic based on artificial intelligence where you have a conversation with a 'computer psychiatrist'. It can be great fun, so try key 16 from the main menu.

Active mail areas cover a wide range of subjects, from advertisements to special interest. An on-line database of telephone exchanges is also featured and a debate area encourages views on current news items. The BB is on viewdata (all speeds up to 2400 baud) on 081-903 1309.



A WIDE RANGING SELECTION ON THE MAIN BB MENU



SELECT AN OPTION


AREA INDEX

NEWS IN BRIEF

● **DUE TO** unforseen circumstances, Mad Rabbit BBs has stopped operation. However, development of Joel BBs is underway and on schedule for release in January 1992. Mad Rabbit systems is also developing an Archimedes Viewdata host system called Questor. No release date has been set, so watch this space for news.

● **JAMES COATES** of Procrastinet fame has created a new BB, which he hopes ex-users of Procrastinet will call on (0568) 612118 (viewdata).

● **If YOU** are interested in astronomy, space exploration or just physics in general, then Starbase 1 may be just the BB you are looking for. Based in London, it offers lots of text files and information databases on a wide range of scientific subjects, most with an astronomy flavour. It also has numerous Acorn Archimedes and BBC files to download. Call 071-733 3992 with your comms software set to scrolling 8N1.

● **ATLANTIS BB**, the bulletin board run by Olly Tseliki, is back on-line after a move to the south coast. Atlantis is now based in Brighton and can be called on (0273) 696060 (300/1200/2400/9600/HST).

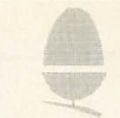
● **IT HAS** come to my notice that at least one bulletin board is running on a premium rate telephone number such as 0898, yet makes no announcement of the fact, advertising free downloads and messages. I believe that it is now under investigation, but it is worth double-checking any exchange codes before you log on to new bulletin boards. If you are unsure, it is worth checking the code with one of the numerous PD phone code locators available.

● **MANY BB** host software packages allow the Sysop (system operator) to patch in Basic programs to integrate with the board and provide on-line games, databases, call loggers and similar. If you are a Sysop and you are particularly pleased with an external program you have written to support your BBS, please write to me, c/o the BAU editorial address, giving details of your program and why you decided to write it. The best ones I receive may even be featured in this column. See you again next month.

Paul Vigay

The Cor… .e Upgrade Solution

ARM3 for A3000's
£399 + VAT inc installation



Qualified Dealer

A3000

- Uses only eight RAM devices
- User upgradeable from 1 to 4 Mb
- Four layer printed circuit board
- Low power consumption
- Available without RAM devices

Bare card - £35 2nd Mb - £56 4th Mb - £159

A3

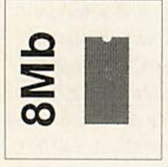


- Includes MEMC1a upgrade
- Large capacity OS ROM sockets
- No soldering required
- Four layer printed circuit boards
- Courier collection of your machine

2nd Mb - £225 4th Mb - £299

Come and See us at the Acorn User Show at Wembley between 11th & 13th October

A400



- 400 series RAM upgrade kits
- Supplied with full fitting instructions
- 410/1 to 420/1 requires 1Mb
- 420/1 to 440/1 requires 2Mb
- 410/1 to 440/1 requires 3Mb

1Mb - £35 2Mb - £65 3Mb - £99

8Mb



- Uses only eight RAM devices
- Suitable for A440, A400/1 & R140
- Fully RISC OS compatible
- Four layer printed circuit boards
- Courier collection of your machine

8 Mb upgrade - £649

ARM3



- New series Aleph One ARM3
- 3 to 4 times performance increase
- Surface mount technology
- Four layer printed circuit board
- Courier collection of your machine
- Suitable for all Acorn ARM2 based machines

ARM 3 upgrade - £380 ARM 3 for A3000's - £399

VIDC



- Increases resolution with all Multiscan monitors
- Doubles desktop work area
- Custom modes for Taxan and Eizo monitors
- Suitable for all Archimedes computers
- Free with any multiscan monitor from Atomwide

Atomwide VIDC Enhancer - £29

DISC

- Syquest removable disk systems
- Including One cartridge, drive unit and all cables
- 42Mb removable cartridges
- High-flow fan fitted for improved cooling
- Please phone for prices on other SCSI related products

Atomwide Syquest drive unit - £445 42Mb disks - £64



VISA

- All products are cross-compatible
- Combination deals available on all products
- Typical combination A310 4 Mb and ARM3 £599
- Dealer enquires welcome
- Phone for full details on all products

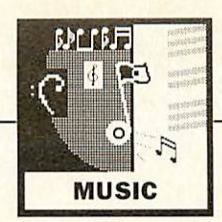
All prices exclude VAT at 17.5% but include delivery



A T O M W I D E



23 The Greenway Orpington Kent BR5 2AY Tel 0689 838852 Fax 0689 896088



NOW IT'S ARC KARAOKE!

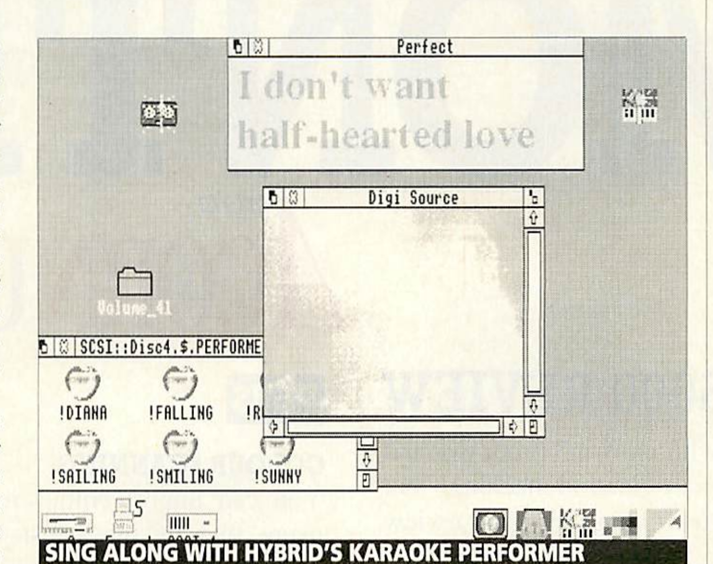
IT HAD to happen. The Karaoke craze has finally hit the world of Acorn, in the shape of *Karaoke Performer* from Essex-based music company, Electromusic Research. Described as 'a new dimension in home entertainment', the *Karaoke Performer* package includes an Archimedes/A3000 or BBC floppy disc as well as an audio cassette containing six professionally produced backing tracks.

The song lyrics scroll in various ways on the computer screen, following the song on the tape. The control program also allows a separate graphics program or video controller to be used to make original backgrounds during the performance. One free graphics animation is provided with each Karaoke set.

Over 90 sets are available, including hits from the 1950s to the 1980s by well-known artists. Each Karaoke set costs £10 plus £1.50 p&p.

To supplement the *Karaoke Performer* sets, EMR is also marketing a customised Karaoke performance unit with echo microphone, mixer and amplifier/speaker system which costs £69.

For further details contact EMR, 14 Mount Close, Wickford, Essex SS11 8HG. Tel: (0702) 335747.



SING ALONG WITH HYBRID'S KARAOKE PERFORMER

EASY ACCESS

A NEW method of connecting multiple peripherals to the Archimedes range of computers has been developed by Hybrid Technology.

AccessLink peripherals plug into the printer port, overcoming the restriction of the user and serial ports which only allow one device to be connected at a time.

ArcRecorder is the first AccessLink-compatible product and costs £32.95. Others will include the Access 2000 Touchscreen at £179 and the Access 1000 Interface at £49. These prices do not include the AccessLink power unit.

The company is also preparing a special needs *ArcRecorder* pack, containing two applications: *VoiceBox* amplifies the user's voice with echo, pitch change, delayed talkback, and 'dalek' effects; *SpeakEasy* encourages users to speak, with a visual 'reward'.

Contact Hybrid Technology on (0223) 861522 for more product information.

BEEB INTERFACING

A READER from Luton, P Hill, has written to ask me what packages are available for the BBC micro to drive a Midi interface, the intention being to control both a synthesiser and drum machine.

First of all, it's worth mentioning that a Midi device and a 'driver' are separate entities. Most Midi interfaces for the Beeb were developed alongside specific software and while one interface might well work another application, your best bet is to stick to the intended pairing.

There are four main contenders. EMR's Midi interface costs £79.90 and complements a variety of sequencing and voice editing software which ranges from £30 to £130. EMR often has bundle deals comprising the interface and selected pieces of software. Contact EMR, 14 Mount Close, Wickford, Essex SS11 8HG. Tel: (0702) 335747.

The U-Music programs were originally designed for professional use. There are two main packages, both of which include a Midi interface. Prices range from £200 to £600. For more details you can contact U-Music, 17 Parkfields, London SW15 6NH. Tel: 081-788 3729.

Hybrid Technology has a Midi interface, the Music 2000, for its Hybrid Music System. You will also need the core module of the system, the Music 5000. Both cost £140.

The software does not support direct input from a Midi keyboard although routines have been developed to help with this problem. You can however, record on the system with the optional Music 4000 keyboard which costs £147. More details from Hybrid Technology, 88 Butt Lane, Milton, Cambridge CB4 6DG. Tel: (0223) 861522.

ESP's Midi interface, the K1, was specially designed for use with the ESP's popular *Compose*, *Compose Play* and *Rhythm Maker* programs and costs £55. Contact ESP, Holly Tree Cottage, Strelley Village, Nottingham NG8 6PD. Tel: (0602) 295019.

NEWS IN BRIEF

● **CLARES** seems to have taken music making on the Arc very much to heart. Hot on the heels of *Rhapsody 2* comes *Vox Box*, a suite of four programs: Perform lets you play *Rhapsody* and Midi files; Vox Beat is a drum pattern creator; Vox Sample converts samples into useable Arc voices; and Vox Synth lets you create sounds using digital synthesis. Both packages cost £53 from Clares, 98 Middlewich Road, Rudheath, Northwich, Cheshire CW9 7DA. Tel: (0606) 48511.

● **EMR** has been busy over the summer months. Apart from its *Karaoke Performer* package, the company has produced a number of file conversion utilities. These will allow music from various sources to be played in Studio 24 Plus and MicroStudio.

The *Maestro* converter converts *Maestro* files, removing the 'garbage' which sometimes appears in them. The SoundTracker converter does the same for *SoundTracker* files, and you can also load drum patterns created in EMR's Rhythm Box. The Midi File Format converter will convert most Midi file data including *Rhapsody* files. It should also be able to convert files from other machines via MultiFS.

At £13 Modern Music 3 is the latest EMR music disc. It contains seven pop songs, and you will need EMR's MicroStudio, Music Player or Studio 24 Plus v2 (or later) to access it. The pieces are configured for Roland's MT-32/CM modules but can be used with any multi-timbral instrument. Studio 24 Plus is now at version 3. New features include unlimited track recording, a link into the EMR *Scorewriter* program and some special sampling effects.

StoryBook has new features including support for multiple input devices, and subjects can be animated on the screen. It requires 2Mb of memory and costs £59. For more details contact EMR on (0702) 335747.

● **AS REVEALED** in last month's main news pages, the dispute over the ArcRecorder name has been resolved. Oak Solutions is calling its product Oak Recorder.

● **IF YOU HAVE** any music news write to me at BBC Acorn User, Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ.

Ian Waugh

NEXT MONTH

BBC ACORN USER

A5000 REVIEW

The new Acorn A5000 with its Arm3 processor and Risc OS 3 sounds like a fascinating machine – but what is it like to use? Don't miss our review

SHOW ROUND-UP

The *BBC Acorn User Show* will be the launchpad for a host of new products for the A3000 and Archimedes. Look out for our full report

PINPOINT

Pinpoint is the new data collection and presentation software package from Longman Logotron. We put it through its paces

IMAGE ANALYSIS

A fascinating insight into how one Archimedes user does some clever things with high-resolution images

Watch out for the December issue of BAU – available November 14 1991

PLUS

COLOUR SCANNING

You can import colour images into your machine using one of the latest hi-tech, low-cost, colour scanners. We look at the options

STEPPING UP

Following on from our successful *First Steps* series, we continue our tutorial series on useful applications for the BBC A3000/Archimedes

FACTORY

ESM's *Factory* allows children to design complex geometrical shapes. We see how it works

REGULARS

- All the latest news and views from the world of Acorn
- ★INFO – helpful advice and ideas covering the BBC A3000, Archimedes, BBC B and Master
- Your letters and problems
- Programs galore on the yellow pages and much more

To be sure of your copy, please fill in the coupon below and hand it to your newsagent. Or why not subscribe? See page 26

DEAR NEWSAGENT, PLEASE ORDER MY REGULAR COPY OF BBC ACORN USER

YOUR NAME

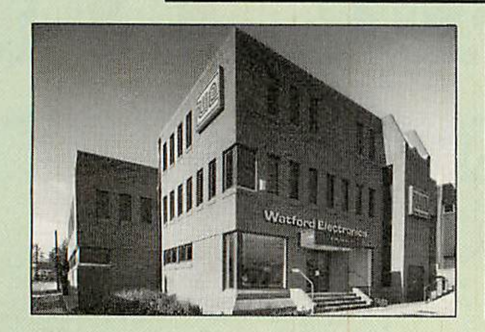
ADDRESS

BBC Acorn User is published by Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ. Distributed by BBC Frontline, Park House, 117 Park Road, Peterborough.

Watford Electronics *presents ....*

Winter Hands-On Open Day

Sponsored by : The Micro User and BBC Acorn User



To Be held at:
JESSA HOUSE

on SUNDAY

1st December 1991

10.00am to 4.00pm

SALES ADVICE

Watford Electronics Technical and Sales personnel will be on hand to discuss all your technical queries and computer requirements. Come and see live demos of popular BBC / Archimedes Software, Hardware and Watford Electronics own range of PC Compatibles.

Yet another chance to bring the family and visit Watford Electronics to watch, learn, and talk to other like minded enthusiasts, experts and novices on the subject of Acorn BBC and Archimedes range of home computer systems.

Hardware and Software - Amongst various products, we shall be demonstrating our NEW ...

Archimedes Hard Card
Archi COLOUR Hand Scanner
Aries Alphascan Monitor
Archimedes Hi-Res Graphics Card
Archi Real Time COLOUR Digitiser
ARM 3 Upgrade - for A300/400 and A3000

Also appearing will be **NEW** products from:

Acorn Computers
Minerva
Colton Software
Computer Concepts
Taxan UK
Panasonic UK
Silicon Vision
Superior Software

Technical Support

- **Watford Electronics:** Our technical team will be available to discuss any technical queries and offer advice.
- **BBC Acorn User:** Contributors and the editorial team will be at hand to answer all your questions.
- **The Micro User:** Mike Cook will be available to help and advise on matters related to BBC/Master.
- **Gordon Taylor:** The renowned Archi 'Guru' and technical writer will be available to advise on matters related to Archimedes.
- **Acorn Computer's** representitives will talk about proposed new products and answer all yours questions.

Educationalist support

- A private area allocated to the specialist in education will be provided.
- Staff will be on hand to talk about current trends and requirements in the educational sector.
- Watford Electronics Managing Director, Nazir Jessa, will be happy to discuss special deals and packages for individuals & educational establishments.

Instant Finance available up to £1000

Purchases can be made at the Open Day and Instant Credit deals will be available via Lombard Tricity Finance Ltd (subject to status). Extended finance over 36 months on any purchase over £300 + VAT (APR 36.8%). Identification will be required, ie Driving Licence, Credit Card and Bank Card. A deposit of 10% of your purchase is all you need to pay on the day.

***** FREE REFRESHMENTS WILL BE SERVED *****



£15 STAR LETTER

I am beginning to wonder if I am the victim of a con trick.

Last year I decided to take the plunge and buy a BBC A3000. I realised that I was going to need a wordprocessor and was interested in the *Genesis* program, so I decided to purchase a Learning Curve package which included both of these items, and a *PC Emulator* as a 'bonus'.

There was no warning to potential purchasers that they were buying software which, although it was functioning perfectly well, would have no real value when any upgrades became available.

Having made extensive use of *Genesis*, I now wish to upgrade to *Genesis II*, but find that because I bought a Learning Curve package, rather than separate software, my existing package is worthless in terms of an upgrade.

I feel that potential purchasers of the LC package should at least be warned that the Learning Curve special offer may not be so special in a year's time.

Richard Still
Lincoln

DEALER APPOVAL

It was sad to read Mr Conridge's letter (*BAU* October issue). Is there anything that can be done to help your readers. I think there is.

Let us first define what a 'good' Acorn dealer should be able to offer its *personal* (meaning not mail order or telephone) customers:

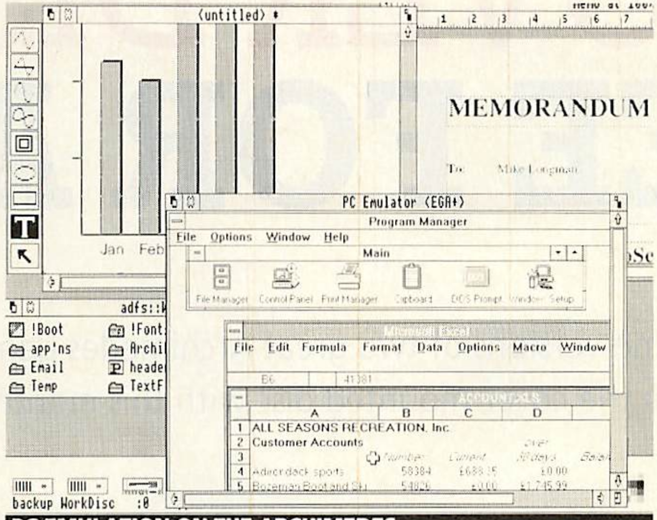
- A showroom in which they can serve their customers
- Demonstration hardware on display and available
- A reasonable selection of software and books in stock, including examples in all main categories – for example, business, games or education
- Knowledgeable staff available to give information on products, including those that are not normally stocked, and to give advice and solve the users' problems.

If this list of criteria is agreed, it should be published in *BBC Acorn User* and dealers should be invited to nominate themselves to be added to a list of *BAU* 'approved dealers'. When a sufficient number of dealers have responded, the list of dealers could be published in the magazine.

The benefits of the scheme for dealers would be an opportunity to promote themselves as a cut above the average. For the customer, it would provide a list of dealers to depend on for decent service.

David Coronel
The Data Store
Bromley, Kent

Of course, Acorn already has a list of approved dealers, and sets down criteria which they have to meet. That does not mean that an independent approval system could not work – we would like to hear other readers' ideas and views on the subject.



PC EMULATION ON THE ARCHIMEDES

WHY EMULATION?

A question that puzzles me, and I am sure many other Acorn addicts, is why it is necessary to use emulators when we want to run some piece of software that was not written for our own computer.

Many programs that people use in offices are made for the IBM PC or its clones and it would come in handy if this software would run properly at home too.

The existence of PC emulators proves that it is possible to read and run PC programs, but why must they be so slow? Is it possible to, instead of reading and running a program, read and translate it into Arm code first, save the translation and run this code from that moment on? This would be a giant time saver, wouldn't it?

Roel Boesenkool
Netherlands

Translation into Arm code would be very complex and it would be necessary for each piece of software you use. You have to weigh up the advantages of using PC software against the relative speed, which is not so slow as to be unusable, especially with the Arm3 processor.

BIG LEAGUE

Why is it, I wonder, that Acorn is not a major league computer company? The machines it produces are unrivalled, yet, in all the offices and banks and shops that I go to, all the computers are either IBMs or Apple Macintoshes.

Apple is an accepted business computer because Apple launched a massive sales campaign and worked closely with software houses to produce a viable business package.

PCs are popular because IBM was very much in at the start, and it also makes high-end computers which have long had a reputation for reliability and solidness. But why does nobody seem to realise that the Acorn machines are more reliable still?

My early BBC micro is still running and has no problems whatsoever, and my Archimedes, which is up and running for most of every day, has not developed any of the irritating mouse glitches that plague other machines.

Maybe if Acorn was to sort its sales strategy out, with proper business packages offering on-site maintenance and useful software, they would be accepted by many more people.

Gavin Sallery
Herts

Acorn is number five in the league of UK personal computer suppliers, so it is hardly an 'also-ran'. The new A5000 is the company's attempt to hit the very markets that you suggest.

LOSING THE BATTLE?

Although some very sophisticated software packages are appearing for the Archimedes, I am afraid that it is in danger of losing the battle to be treated as a serious machine, unless some of them follow the direction taken by some of the more heavyweight software for the PC.

It would appear that the trend is now towards databases and so on, which are programmable. This means that it is possible to write software tailored to one's own specification by writing an overlay for the main package which does all the work. The art of programming is shifting from programming from scratch in Basic, C or assembly language, to writing much more sophisticated software, with much less effort, on one of these packages.

Ironically, this technique was pioneered a number of years ago by Computer Concepts, with *Wordwise Plus* on the BBC B.

Martyn Fox
Windsor, Berks

BAU – GREAT VALUE!

I have just bought the October issue of *BBC Acorn User* with the free cover-mounted 3.5in disc. Do you intend to continue with these?

John Lee
Birmingham

Our sales will dictate this. Let us know how much you would be prepared to pay for a disc, on top of the current cover price.

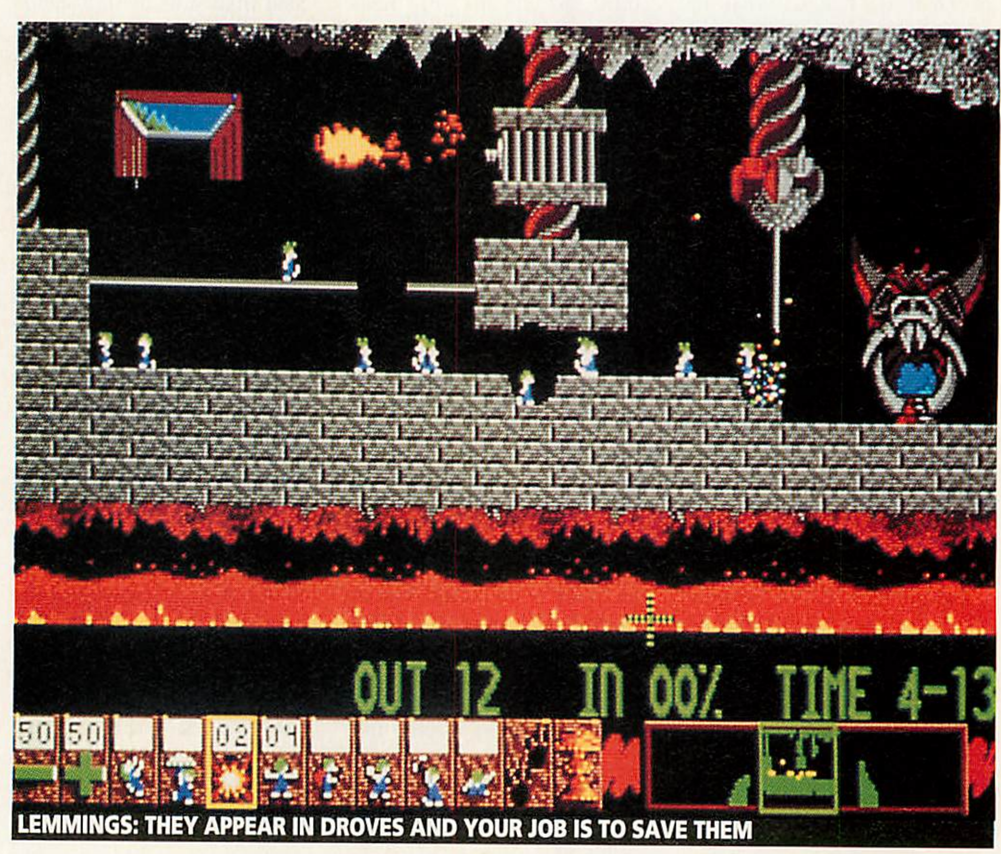
COVER DISC FREE FOR ALL!

Demo versions of two great Archimedes games, FREE on the cover-mounted disc with this month's issue

Let's go! One lemming, two lemming, three lemming, four... Out they come and off they go. Over a cliff, in for a swim and even under a lead weight of considerable tonnage if given the opportunity.

These are the sort of sights you see if you play the exclusive demonstration version of *Lemmings* from Krisalis Software, which is on the free cover-mounted disc with this issue of the magazine.

But this isn't the only game you'll find on the disc. The Fourth Dimension has also prepared a special mission for its Tiger Moth flight game, *Chocks Away*, exclusively for our readers.



LEMMINGS: THEY APPEAR IN DROVES AND YOUR JOB IS TO SAVE THEM

LEMMINGS

In the interests of lemming conservation, here are a few tips on what to do when the trapdoor opens and the first lemming drops out.

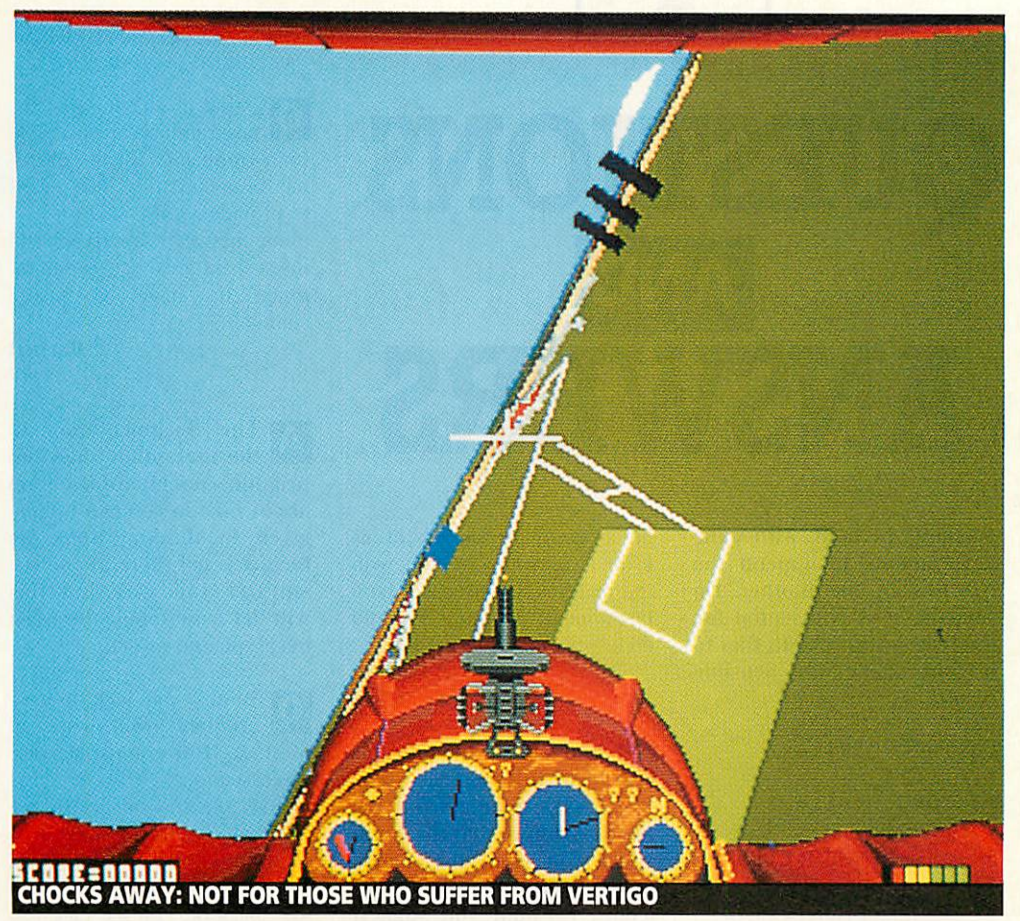
The object is to save as many lemmings as possible. All you have to do is ensure that a safe route exists between the trapdoor and the exit, then the lemmings just follow this and they're home. The information screen, which is displayed just before play commences, will tell you how many lemmings you actually need to save on that particular level. The next information screen, displayed just after you have played, tells you how many lemmings you have managed to save.

You will notice a pair of crosshairs somewhere on the screen, that you can control by using the mouse. The crosshairs are actually a way to influence the lemmings. Point at a lemming and click using Select. The effect this has depends on which of the lemming-jobs is selected.

The jobs selection area is the row of icons along the base of the screen. Ignoring the minus and plus signs for the moment, the icons represent the following jobs. From left to right: the climber icon makes a lemming climb the moment it reaches a vertical wall. It will then keep climbing until it either gets to the top or dies trying.

Next is the parachute icon. Any lemming can be given a parachute by clicking on the lemming while this icon is selected – any time before it hits the ground. The adjacent explosion icon can be used for disposing of an unwanted lemming. There are times when they don't help matters and the best thing for them is a dose of self-combustion. Again, to make this happen select the icon and then click on the doomed lemming.

Moving on, the blocker icon is used to stop a lemming in its tracks. Not only that, but any more lemmings coming upon a blocker will be turned back the



CHOCKS AWAY: NOT FOR THOSE WHO SUFFER FROM VERTIGO

other way, so they can be very useful if placed just before some sort of hazard. The drawback is that the only easy way to make a blocker stop blocking is to blow it up.

A builder can be spotted a mile off because of the Santa Claus-style sack slung over its shoulder. A builder will build diagonally up for a few seconds and then stop and proceed to walk over the edge of its creation, unless you turn it back into a builder first. Useful, but you have to keep an eye on them.

The final three icons are bashers and diggers and miners, excavating in the horizontal, vertical and diagonal directions respectively. A lemming made to dig will continue going until it reaches open space or something solid. If you want a lemming to dig then you have to click on it just before it reaches the spot where you want the hole.

Finally the last two icons are the 'pause' icon and the 'mushroom' icon. The pause icon is self-explanatory and the mushroom icon is the one you use when it all goes wrong. Note its distinct resemblance to mushroom clouds – it is used for total lemming destruction.

You can use the square outline that covers part of the map-diagram (bottom right) to alter your view of the play area. The plus and minus signs mentioned earlier simply affect the rate at which lemmings fall from the trapdoor.

So, go on – save those lemmings. The full version of the game can be obtained from Krisalis Software but don't forget that you could win a copy by entering the competition in the Games Supplement in this issue.

CHOCKS AWAY

Generally speaking, people who buy games only refer to the instructions once they have discovered how *not* to play the game. The good thing about The Fourth Dimension's *Chocks Away* is that it is simple to play, but somewhat trickier to master.

Load it up and you'll see what we mean. After the flashy, backward-flying demo that skims you across the landscape at Mach 2, (twice the speed of sound), you'll find yourself sitting squarely in front of an ancient red cockpit with dials and a very clean window – or, to be more precise, no window.

Try this: hold down the left hand CTRL key with one finger and, with a combination of your other fingers that you find nice and comfortable, get ready with Z, X, " and ?. You'll hear the engines start and then the world will begin to move backwards all around you, although it will probably seem more like you are moving forwards! When you reckon you're going fast enough to take off, press down the ? key and the nose should rise.

At some point you should probably let go of the CTRL key, if you haven't already done so. It will just end up making your fingers ache. Now you're airborne, and reading at the same time – such talent. This is the time to familiarise yourself with the controls. Gain a bit of height, then experiment with Z and X, which roll the aircraft, " and ? which affect the pitch, and RETURN, to let rip with your one and only weapon.

This version of *Chocks Away* has been specially prepared for *BBC Acorn User* and there is only one mission, which is actually a pretty hard one. Pressing M will take you to the map screen where you are likely to spot three flashing dots. The mission? Roast those dots! Well, technically speaking they represent a weird plane with a foreign name or a couple of barrage balloons but, the point is, you should try not to stray from the real targets.

It is the dots that make the mission. Killing the numerous baddies who fill you with flak only boosts your score and gives you peace. At the end of the day, those dots must die! Stick to the task in hand before taking on the other guys. Of course, they may not feel the same way about you. The mission is completed when the dots are no more and you safely land on the runway.

The full version of *Chocks Away* allows two players to fight each other or work together on the mission, using a split screen. You might want to try out, even on this demo version, the various viewpoints from which you can see your plane. Toggling the ENTER key is the simplest way to do this, but it is more fun to use function keys F5 and F6 and use the cameras. Try it all out yourself, and have fun!

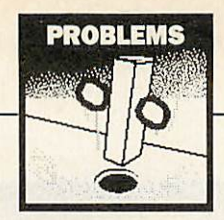
The full *Chocks Away*, with 20 missions, can be bought from The Fourth Dimension, which also produces an *Extra Missions* disc with 26 new missions. To play the *Extra Missions* you will need to buy *Chocks Away* first. A *Chocks Away Compendium* pack, comprising both packages, will set you back £39.95.

PRODUCT DETAILS

- **Product:** Lemmings
- **Supplier:** Krisalis Software, Teque House, Masons Yard, Downs Row, Moorgate, Rotham S60 2HD. Tel: (0709) 372290
- **Price:** £25.99

- **Product:** Chocks Away
- **Supplier:** The Fourth Dimension, 1 Percy Street, Sheffield S3 8AU. Tel: (0742) 700661
- **Price:** 24.95

★ Both game demos will run on the BBC A3000 and Archimedes only.



QUESTIONS AND ANSWERS

Q I have recently bought a Tandy WP-2 portable computer which I intend to use with my BBC Master 128. Unfortunately I am experiencing some difficulties with the transfer of data between the BBC and the Tandy. The salesperson told me the transfer was very simple.

Ann S Fariah
Maryport, Cumbria

A Despite what you have been told by Tandy, the transfer may not be quite as straightforward as you have been led to believe. Your problem could be one of not correctly setting the baud or data parity to match on both machines. Or you may need to run some kind of communication package on the BBC to enable you to transfer text between the Tandy and the BBC. I would start by ensuring that the two machine are configured to match.

Q I am an ardent *ViewStore* user on the BBC Master 128. However I have two *ViewStore* datafiles that I wish to join together into one file. Is this possible? I would hate to think that I would have to retype one of the files again.

H. Manor
East Mosely

A The format of *ViewStore* datafiles enables them to be quite easily manipulated by BBC Basic. The following program could probably be used, with some amendments to append the two files to one another. Do remember, it is essential for the field order of both files to be the same for sensible results.

```
10 INPUT "File 1
";file1$
20 INPUT "File 2
";file2$
30 one=OPENUP(file1-
$)
40 two=OPENUP(file2-
$)
50 REPEAT UNTIL
BGET#one=1
60 PRT#one=PTR#one-1
70 REPEAT
80 byte=BGET#two
90 BPUT#one,byte
100 UNTIL byte=1
110 CLOSE#one
120 CLOSE#two
```

Q I know that you can use the HP DeskJet printer with the Acorn *PrinterLJ* printer driver. It is not, however, totally successful, as I do have some trouble with the margins settings. Can you recommend anything I could do to get suitable margins.

D Harvey
Ichen

A You can set the margins from the page size box, which is available from the main printer driver menu when you click the centre mouse button over the driver icon. I would you suggest that you try the following settings:

Top: 2mm
Bottom: 10mm
Left: 3mm
Right: 4.2mm

If you experience difficulties, with a small part of the page you are printing appearing on the next page with certain programs you should adjust the bottom margin to 11mm. This is because some programs print right to the very bottom of the printable area.

Q I find it amazing that the programmers responsible for writing *Edit* for the Archimedes and BBC A3000 failed to provide a command for toggling between overtype and inset. Is it just bad programming or have I missed something?

P Barnett
York

A The documentation in the user guide does not provide enough information about *Edit* so you can be forgiven in thinking that the facility is not there. If you try SHIFT-F1 you will find this will let you toggle between overtype and insert.

Q With some luck, I have acquired from work an 80-track IBM compatible disc drive without a PSU which I would like to connect to my BBC Master 128. Is this possible? Will disc drives designed for other computers work with my machine? Please can you advise?

Phillip Brooke
Hourtou, France

A It is quite likely that the disc drive that you have acquired is compatible with the BBC Master series of computers. As the BBC will only supply 1.25 amps at 12v and 5v you may find that the disc drive you require needs a stabilised power source. You should be able to purchase one of these in France,

POSTING YOUR PROBLEM

If you have a particular problem with an Acorn micro, commercial software or a program you are trying to write yourself, then BBC Acorn User might be able to help. The BAU Post A Problem service guarantees to give you a personal answer to your problem within 10 working days – and for just £4.

Write out your problem with as much detail as possible and, if a program is involved, include a disc or cassette. Fill in the coupon and send it and your problem along with a cheque or postal order for £4 (including VAT) made out to Redwood Publishing. If you require recorded delivery, please add the cost of this.

Please note that debugging readers' own programs or those from other magazines is a complex task and we cannot guarantee to give a full solution. Unless the problem can be spotted quickly, the Post A Problem service will only be able to make general comments.

The Post A Problem service will answer the problem and return all corresponding material received within 10 working days of receipt. If we fail to match this promise then your cheque or postal order will be returned – you just can't lose!

BBC Acorn User Reader Service
20-26 Brunswick Place, London, N1 6DJ

Name..

Address..

....

....

....

Daytime phone number..

I enclose a cheque/postal order for £4 made out to Redwood Publishing and an SAE with my problem.

Office use only : Date in..........Date Out.........Reference..........

as you will at least be looking for an IBM-compatible disc drive power supply rather than a BBC computer one.

To operate with the BBC, the disc drive will need a 34-way flat ribbon cable to connect between the drive and the BBC. Usually the disc drive end is a standard connector used on all drives, whether BBC or IBM PC.

Q Although I have a Archimedes 310 upgraded to 4Mb, I still experience problems with the amount of free memory available when I use the Acorn *PC Emulator*. Can you offer any guidance?

B A Haines
Littlehampton

A I think the reason that you find very little memory free is that you are entering the Acorn PC Emulator from the Desktop. This is because the Desktop is only allocating 640K to the emulator, including all that used in the emulation program itself. To get round it and to aid quicker loading create this Obey file:

```
WimpSlot -min 1024K
-max 1024K
Dir :4.$PC
Run Emulate
```

Replace the directory in Line 2 with the directory of your emulator if necessary.

This file should be Run and placed inside an application directory, whereupon double clicking on the application icon will run it.

Q I hear that you can now purchase removable hard disc drives for the Archimedes and BBC A3000 computers. Can you tell me any more about them? How do you connect them to an Archimedes computer and are they fast, reliable and robust?

Mark Gill
Reading

A You are quite right – removable hard drives are available from a number of companies. Norwich Computer Services, at 98a Vauxhall Street, Norwich NR2 2SD, supplies the MicroNet MR45 removal hard drives, which have to be used with a SCSI card – when used with the Oak SCSI card they are fast – average access time is 25 milliseconds.

The MicroNet drives are certainly reliable, having been successfully used for some time on the Apple Macintosh range. The discs, when not in the drives, are extremely robust. It is possible to throw one across the office or drop it on the floor and it will still verify fully, although this treatment is not recommended!

Q On a BBC B, how do you find the address of the first free byte after a program's variable storage area?

Steve Santon
West Bromwich

A This information is stored in bytes &02 and &03 of zero page. Do remember that if you attempt to access this information as a hex number, any leading zeros will be left out. So, to access the value correctly in hex, use:

```
vartop=~(?2+?3*256)
```

NB – ~ is the tilde character

Q I am still using the *Acorn Desk Top Publisher* program, which I find meets my simple DTP needs well. I find in certain instances that the space between letters looks wrong. Is there anything I can do about this?

Harriet Marks
Wolverhapton

A The space between letters, called kerning, can be adjusted using the Kern command from the Text edit menu or by pressing CTRL-K. The first of these lets you set the kerning by adjusting it up and down by an amount measured in points. CTRL-K decreases the kerning between two letters by half a point. Be careful when using this command as sometimes kerning looks wrong on screen when it isn't. It's a good idea to check the kerning in double size or you may find what looks right on the screen is wrong when printed out.

ACORN CUSTOMER HOTLINE

The 1.60 multitasking *PC Emulator* has now been released for a couple of months and we would be interested to hear from users about their experiences with software that will run or will not run. We can then look into problems of software not running and compile a list of software that will run to help future customers. If you are intending to send us some information on *PC Emulator* compatibility please provide the following information – machine type, the amount of memory, the version of DOS being used and the version of the application being run.

The address to send the information to is : Customer Services, Acorn Computer Limited, Fulbourn Road, Cherry Hinton, Cambridge, CB1 4JN. Please mark your envelope 'PC Emulator'.

We still receive a large number of enquiries regarding printer drivers. The printer driver we get most enquiries about is PrinterDM. The PrinterDM application provides a number of different printer emulations which are:

- EPSON LQ compatible (Low) (60 by 60dpi)
- EPSON LQ compatible (Medium) (180 by 180dpi)
- EPSON LQ compatible (High) (360 by 180dpi)
- EPSON FX compatible (Low) (60 by 72dpi)
- EPSON FX compatible (Medium) (120 by 144dpi)
- EPSON FX compatible (High) (240 by 216dpi)
- EPSON LQ-850 compatible (Very high) (360 by 360dpi)
- NEC PinWriter P6 plus (Very high) (360 by 360dpi)

It is necessary to ascertain which printer driver within PrinterDM is compatible with your printer, select that printer driver and then use the 'save choices' options on the PrinterDM menu to ensure that next time you start up PrinterDM the correct driver is automatically selected.

The different printer drivers are selected by clicking with Select button over the !PrinterDM icon when loaded into the machine. After clicking, a dialogue box will appear which contains the name of the printer driver selected. Clicking over the name of the printer type with the Select button will cycle through the different printer drivers available.

Hard discs are becoming more and more popular for all machines as time goes on. With a hard disc installed it becomes much easier to build a system which starts with various applications you always use ready loaded. The following information will allow you to load in whichever applications you like when you Crfirst start the Desktop. An example of this is below.

Create a Text file using *Edit*, and type in:

```
Filer_OpenDir adfs::Disc.$
Run adfs::Disc.app1.!System.!Boot
Run adfs::Disc.app1.!Draw.!Boot
Run adfs::Disc.app1.!Paint.!Boot
Run adfs::Disc.app1.!Edit
Run adfs::Disc.app2.!Alarm
Run adfs::Disc.app2.!TinyDir
Run adfs::Disc.app2.!Magnifier
```

The name Disc is assumed to be the name of your disc. Save this as DeskTasks in your discs root directory.

Now add the following line to the end of your Boot file create a boot file with this line in it:

```
*Desktop -file adfs::Disc.DeskTasks
```

Now ensure you have saved all edited data and CTRL-BREAK your machine. Your boot sequence will execute, there will be a short pause, and then you will enter the desktop with your Disc's root directory open, with *Edit*, *Alarm* and *TinyDirs* running, and *Magnifier* loaded into *TinyDirs*.

If your machine does not boot ensure your configuration is set to BOOT, and the disc's OPT 4 setting is correctly set for the type of boot file you have.

What has happened is that the *desktop command has run each line of the DeskTasks file as a task within the window world. System.!Boot must be run before *Edit* is run: this is equivalent to System being 'seen' in a Filer directory viewer, and tells *Edit* (and anyone else who needs to know) where system resources can be found.

Note that all applications are quoted with their full path-name, including filing system name and drive name or number. It's an important principle of operation on the desktop that, as far as possible, all objects are identified by a full path-name, and so access to them is unaffected by changes of the current directory, drive, or filing system.

THE INTELLIGENT CHOICE FOR Acorn

College Computers

SPECIALISTS in the supply of COMPUTERS to PRIMARY, SECONDARY and TERTIARY EDUCATION

ARCHIMEDES SOFTWARE

ART/DESIGN/GRAPHICS	
Artisan II	£43
Atelier	£63
Autosketch II	£66
Gamma Plot	£38
Graph Box	£57
Mogul	£18
Poster	£77
Pro Artisan	£71
Render Bender 2	£56
Sigma Plot	£38
DATABASES	
AlphaBase	£34
Genesis	£64
Multistore	£192
DESKTOP PUBLISHING	
Acorn DeskTop Publisher	£125
Impression Junior	£77
Impression II	£131
Tempest	£93
INTEGRATED	
Desktop Office	£96
Logistix	£77
Pipedream 3	£118

We also carry a wide range of GAMES and LEISURE software. Call for details.

LANGUAGES	
ANSI C Rel 3	£122
Assembler	£145
Fortran 77	£75
ISO-PASCAL	£75
LISP	£145
Prolog X	£145
SILICON VISION	
Arc PCB Professional	£269
Gerber Plot	£91
Realtime Solids Modeller	£132
Risc Basic	£72
Robo Logo	£52
Solid Cad	£115
Solid Render	£115
Solid Tools	£269
Super Dump	£19
Super Plot	£28
SPREADSHEETS	
Intersheet	£23
Schema	£90
Sigmasheet	£38
Viewsheet	£44
WORDPROCESSORS	
1st Word Plus II	£68
Easiword	£29
Interword	£23
Pendown Archi	£47
View	£44

MONITORS

SPECIAL OFFER
14" Multiscan Hi-Resolution 0.28 Dot Pitch, 1024 x 768 **£247**

MICROVITEC	
1431 Standard Resolution	£165
1451 Medium Resolution	£199
14M325 (CUB 3000) Medium Res.	£179
1441 High Resolution	£349
2040CS 20" High Resolution	£659
Touchtec 501 Touch Screen	£234
PHILIPS	
BM7502 12" Hi-Res Green	£68
CM8833/II 14" Medium Res	£167

NEC	
Multisync 3D 14" 0.28 Dot Pitch	£334
PANASONIC	
14" Super Hi-Res 0.29 Dot Pitch	£232
TAXAN	
770LR 14" 0.31 Dot Pitch Low Rad	£375
775 Plus 14" 0.28 Dot Pitch Hi-Res	£373
795 Trinitron 0.26 Dot Pitch	£415
875 17" 0.26 Dot Pitch	£718
VIDC Enhancer Board	£24

PRINTERS

FREE Parallel Printer Cable With All Printers

Canon BJ10e Portable	£187
Canon BJ300*	£350
Canon BJ330*	£397
Citizen 120D+	£99
Citizen 124D	£145
PN-48 Portable	£208
Swift 9	£141
Swift 24	£204
Swift 24X	£293
EPSON	
LX-400	£108
LX-850	£147
FX-850	£278
FX-1050	£358
DFX-5000	£1089
DFX-8000	£1995
LQ-200	£175
LQ-450	£179
LQ-570	£217
LQ-870	£376
LQ-860 Colour	£461
LQ-1010	£279
LQ-1070	£329
LQ-1170	£439
LQ-1060 Colour	£618
LQ-2550 Colour	£696
SQ-850	£439
SQ-2550	£635
Hew/Pack Thinkjet*	£270
Hew/Pack Quietjet*	£304
Hew/Pack Quietjet Plus*	£389
Hew/Pack Deskjet 500	£298
Hew/Pack Paintjet*	£450
Hew/Pack Paintjet XL*	£1055

Hew/Pack Rug/Writer*	£929
IBM Proprinter 24P	£220
IBM Series II 2380	£280
IBM Series II 2381	£349
IBM Series II 2390	£320
IBM Series II 2391	£380
IBM Quickwriter 5204	£490
IBM Execjet 4072	£446
Integrex Colour Jet	£499
Mannesman Tally MT81	£91
Nec P20	£179
Nec P30	£219
Nec P60	£329
Nec P70	£408
Nec P90	£550
Panasonic KXP1180	£100
Panasonic KXP1123	£138
Panasonic KXP1124i	£182
Panasonic KXP1695	£283
Panasonic KXP1624	£283
Panasonic KXP 2624 Colour	P.O.A.
Panasonic KXP1654	£390
STAR	
LC20	£115
LC200 Colour	£158
LC15	£180
LC24-10	£148
LC24-200	£184
LC24-200 Colour	£222
LC24-15	£299
ZA200 Colour*	£248
ZA250 Colour*	£313
XB24-200 Colour*	£313
XB24-250 Colour*	£375

Printers with * inc 1 years on-site maintenance.

LASER PRINTERS

FREE Parallel Printer Cable With All Lasers

	PPM	
Brother HL-4	4 *	£610
Brother HL-8e	8 *	£946
Brother HL-8PS Postscript	8 *	£1486
Canon LBP-4	4 *	£574
Laser Direct Hi-Res Card for LBP4		£319
Canon LBP-III	8 *	£984
Canon LBP-IIIT Dual Bin	8 *	£1378
Canon LBP-IIIR Dual Bin Duplex	8 *	£1486
Epson EPL-4100	6 *	£626
Epson EPL-7500 Postscript	6 *	£1186
HP Laserjet IIIP	4 *	Call
HP Laserjet III	8 *	£1025
HP Laserjet IIID Dual Bin Duplex	8 *	£1740
IBM 4019E XL	5	£735
IBM 4019 XL	10	£990
Kyocera F800T	8 *	£934
Laser Direct	6	£844
NEC Silentwriter 2 S60P P/Script	6 *	£1100

	PPM	
NEC Silentwriter 2 290 P/Script	8 *	£1408
NEC LC890XL Postscript	8 *	£2370
NEC Colourmate PS P/Script	*	£5489
OKI Laser 400	4 *	£490
OKI Laser 800	8 *	£790
OKI Laser 840 P/Script	8 *	£1100
Panasonic KXP4420	8 *	£639
Panasonic KXP4450i Dual Bin	11 *	£990
Panasonic KXP4455 D/Bin P/Script	11 *	£1540
QMS PS410 Postscript	4	£1350
QMS PS810+ Postscript	8	£1996
QUME Crystalprint WP Plus	6 *	£688
Qume Crystalprint S/Series II	6 *	£1050
Qume Crystalprint Publisher PS 2Mb	6 *	£1540
Star LP-4	4 *	£670
Star LP-4PS Postscript	4 *	£830
Star LP-8 III'	8 *	£950
Star LP-8 III Starscript P/Script	8 *	£1180

All printers marked by an * include 12 months on-site maintenance.

DELIVERY Archimedes Micros only: Free Delivery
Hardware: £7 + VAT per box
Software: £7 + VAT per order
Lasers: £15 + VAT per printer
Next Working Day Service - call for details. UK Offshore - call for details

ALL PRICES EXCLUDE VAT

CREDIT CARD MAIL ORDER HOTLINE

081-680 5686

FAX: 081-760 9861



Prices are subject to change without notice. Please check suitability with the manufacturers before ordering. Goods are not offered on a trial basis. Orders are accepted subject to our standard conditions of sale – available on request. E&OE.

Subject to availability despatch is normally effected within 2 days from receipt of cleared payment. Please allow 7 working days for cheque clearance. All orders will be fulfilled within 28 days unless otherwise notified.

College Computers, 14 Emmabrook Court, Sea Road, Rustington, Littlehampton, Sussex BN16 2NG

To: **College Computers, 14 Emmabrook Court, Sea Road, Rustington, Littlehampton, Sussex BN16 2NG.** I wish to order

QUANTITY	DESCRIPTION	PRICE

Please state disk size ______ Delivery
I enclose cheque/PO for £ ______ inc VAT Total
or charge my Access/Visa No: Exp. date ______ VAT
Total £

Name ______
New/Old customer (please delete). Account No. (if known) ______
Address ______
Postcode ______ Tel No: ______

AU 11

SPECIAL OFFER
Epromryter for Master and BBC £49(b)

TECHNOMATIC

Techno House 468 Church Lane, London NW9 8UF
Tel: 081-205 9558 Fax: 081-205 0190
Mon-Fri: 9.15-5.30. Sat: 10.00-4.30

All prices ex VAT. Prices are subject to change without notice. Please add carriage (a) £8.00 (Courier) (b) £5.00 (c) £2.50 (d) £2.00 (*) Courier included

techno-I

The techno-I Real-Time Colour Video Digitiser for Archimedes computers is one of the most advanced video digitisers available, with features usually found only on top-of-the-range models for the IBM PC.

The techno-I card, with RISC OS multitasking software, allows you to grab a picture from a video source (TV, Video recorder, etc.) and convert it into a sprite. This can then be dragged to RISC OS applications such as art or DTP packages.

Unlike simple RGB video digitisers, techno-I handles colour in 25 bits with 7 bits luminance and 18 bits chrominance. By manipulating the image using hue, saturation and luminance, it mimics the human visual system. The colours are therefore truly WYSIWYG. techno-I will also give true monochrome representation of colour images.

The on-screen viewfinder displays live colour or monochrome in real-time. The viewfinder can be either 1/16 or 1/4 screen area, and can be offset vertically and horizontally under user control.

The frame buffer resolution is up to 512 by 512, with programmable vertical and horizontal resolution. Complex frame manipulation features are built into the hardware including options to grab the current frame or previous frame and grab the last completed frame.

All viewing, video and digitising parameters are software controlled, there are no presets, no setting up, simply connect to a video signal, load the software and digitise!

***techno*-I features include:**

★ 25 bits resolution, 7 bits luminance and 18 bits chrominance
★ Contrast, colour and brightness set from Desktop
★ Image scaling up to 1280 by 1024 in any 256 colour mode
★ Selectable or automatic monochrome/colour digitising
★ Auto detection of video signal, field frequency and colour
★ Single width podule using surface mount technology
★ Zero wait state 16 bit MEMC podule
★ Low chip count (13 chips) utilising the latest technology
★ 40% of chips Brainsoftware custom designed
★ Uses a single 5v supply, no extra 12v supply required
★ Compatible with international TV standards
★ Chrominance comb filter for studio quality CVBS colour
★ Colour Transient Improver sharpens edges of coloured objects
★ Picture signal improver enhances the luminance content
★ Automatic black level and gain control
★ Hardware programmable noise filtering
★ Supplied with latest ChangeFSI release
★ SVHS input upgrade available

techno-I for 300/400, 540, etc	**£249(b)**
techno-I for A3000 (Securely boxed for external fitting)	**£279(b)**
SVHS Upgrade	**£100(d)**

NO PRINTED PICTURE CAN DO IT JUSTICE
Send for full details and free demo disc

techno-ION Bundle

A unique package comprising techno-I, the SVHS upgrade and the Canon ION camera

techno-ION for 300/4000 Series	**£699(a)**
techno-ION for A3000	**£729(a)**

Send for full details and free demo discs. Existing users can upgrade to techno-ION

techno SCAN II

Probably the definitive monochrome scanning package!

The all NEW technoSCAN II package provides full monochrome operation at 400 dpi as well as 8 and 16 level grey scale scanning and provides the following features:
Suitable for all Archimedes micros and integrates fully with the multitasking RISC OS environment.
Advanced memory management system releases memory when not required allowing scanning and DTP in a 1MB computer.
Flexible zoom control allows palettes to be imported, tailored and resaved with more powerful tone and tinting features than most painting packages.
Interactive help and a superb manual.
Direct printing with RISC OS drivers.
Saves sprites direct into PAINT and DTP or to disc.
Saves sections and palettes into any graphics mode.
At the same low price as the well tested original.

technoSCAN II complete with interface card and manual	**£149(b)**
technoSCAN II for A3000	**£175(b)**
technoSCAN II upgrade for techno SCAN	**£22.50(c)**

RAM UPGRADES

A310 1Mb	**£260(*)**
A310 3Mb	**£320(*)**
A3000 1Mb	**£56(c)**
A3000 3Mb	**£149(c)**
A410/1 1Mb	**£49(c)**
A420/1 2Mb	**£79(c)**
A410/1 3Mb	**£129(c)**
A440 4Mb	**£649(*)**
ARM 3 FITTED BY US	**£375(*)**

ARCHIMEDES MONITORS

Cub 3000 14" Med Res RGB	**£195(a)**
Philips CM8833/II Med Res, stereo sound, 12 months O.S.M.	**£209(a)**
Acorn 14" Med Res, colour with stereo sound	**£209(a)**
Taxan 770+LR 14" Multisync Hi Res monitor	**£365(a)**
Taxan 795 Flatscreen Multisync with Atomwide VIDC enhancer	**£415(a)**

HP Paintjet Printer £499(a)

includes 1 year on site maintenance limited period offer

Paintjet Printer driver	£15(d)
Parallel Printer Lead	£7(d)

ARCHIMEDES MODEM PACK

Miracom WS4000 lead and ARC Comm Software Modem Pack	**£129(b)**

A3000 UPGRADES

Acorn MIDI/user Port	**£49(b)**
Wild Vision Chroma Genlock CG1	**£215(b)**
Serial Port Upgrade Kit	**£19(c)**
A3000 monitor stand	**£17(b)**
A3000 Technical Manual	**£29(c)**

A300 & A400 SERIES

Acorn I/O expansion Card	**£80(b)**
MIDI Add-on to I/O card	**£37(c)**
MIDI Expansion Card	**£66(c)**
Wild Vision Chroma Genlock CG2	**£215(b)**
Tracker Ball – new low price	**£30(c)**
16 bit Parallel I/O card	**£195(b)**
AD C1208 A to D Convertor	**£495(b)**
Dual RS232 Serial card	**£195(b)**
IEEE Interface	**£283(b)**
Arc Prototyping board	**£35(c)**

We carry a full range of Archimedes software and hardware, send for our new catalogue and price list

Please send me your new compehensive Acorn Catalogue
Name ....
Company ....
Address ....
....
Postcode ....**Tel**...................
Return to Technomatic Ltd, Techno Huse, 468 Church Lane, London NW9 8UF
A/W

TEL: 081-205 9558

SPECIAL OFFER
Epromryter for Master and BBC
£49(b)

TECHNOMATIC

Techno House 468 Church Lane, London NW9 8UF
Tel: 081-205 9558 Fax: 081-205 0190
Mon-Fri: 9.15-5.30. Sat: 10.00-4.30

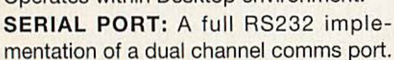
All prices ex VAT.
Prices are subject to change without notice.
Please add carriage
(a) £8.00 (Courier)
(b) £5.00 (c) £2.50
(d) £2.00
(*) Courier included

A3000 MULTIPOD PROFESSIONAL

Professional design and use of latest hardware/software technology have enabled this five function podule to provide the highest quality performance at an economical and realistic price. The five functions are:

FAST-SCAN VIDEO DIGITISER: Offers the highest resolution and number of picture levels of any video digitiser for the Archimedes computers. Capable of digitising in any mode to 640 x 512 pixels with 256 grey levels. Colour can be digitised with a camera and filters providing 24 bit colour resolution. Software operates within Desktop and offers contrast/brightness control, zooming, grey scaling and sprite saving.

SOUND DIGITISER: Samples for sound frequencies from 4KHz to 80Khz can be manipulated, composed and saved. Editing functions include filtering, mixing, overlaying, swapping, cut/paste. Saved sound modules including stereo sound samples can be used in various applications including games or can be exported to other sound packages. Operates within Desktop environment.



SERIAL PORT: A full RS232 implementation of a dual channel comms port. It is IBM compatible using a 25-way D connector. Uses FX and SYS calls.

INSTRUMENTATION/JOYSTICK PORT: A high speed A to D convertor which provides samples at up to 100 KHz for versatile datalogging. As BBC B analogue port, uses the usual ADVAL commands.

Multipod Professional A3000	**£130(b)**
Multipod Filter Set	**£15(c)**
B&W CCTV Camera for Multipod	**£200(b)**

NEW MULTIPOD BREAKOUT BOX

The Multipod Breakout Box splits up the RGB components of a colour video source and links them into the Multipod's slow scan digitising input. Controlled switching of the Breakout Box is provided from the Multipod using a new RISC OS colour video module.
You can now digitise full colour images direct from your home VCR, (must have perfect freeze frame), or rostrum camera using your Multipod.

Multipod Breakout Box **£85(b)**

SPECIAL SUMMER OFFER
Multipod +Breakout Box for A3000 £205(b)

Archimedes SOFTWARE

WORD PROCESSORS

First Word Plus Rel. 2	£65(c)
Pipedream 3	£115(c)
Spell Master	£20(d)

SPREADSHEETS

Pipedream 3	£115(c)
Schema	£90(c)

UTILITIES

ARC DFS	£25(c)
PC Access	£30(d)
Clares Toolkit	£5(d)
PC EMULATOR Old version	£79(c)
PC EMULATOR New version	£89(d)
TCP/IP	£189(c)
RISC LC10 Driver	£15(d)
RISC OS EXTRAS '91	£10(d)
SID Utilities Disc 1	£5(d)
SID Utilities Disc 2	£5(d)
SID Utilities Disc 3	£5(d)
SID Utilities Disc 4	£5(d)
ChangeFSI new version	£10(d)
Snippet	£27(d)
RISC Paintjet driver	£15(d)

LANGUAGES

ANSI C Rel 3	£100(c)
TWIN	£24(d)
Arch Assembler	£130(b)
RISC BASIC Compiler	£100(c)

COMMS PACKAGE

Arc Comm	£22(d)
Arc Comm 2	£54(c)

DESKTOP PUBLISHING

Acorn Desktop Publisher	£99(c)
Ovation	£85(c)
Impression Junior	£75(c)
Impression II	£135(c)
Desktop Folio	£85(c)
Poster	£79(c)

DATABASES

Ancestry	£60(c)
Genesis	£65(d)
DataVision	£125(c)

EDUCATIONAL PACKAGES

Craftshop 1	£27(d)
Craftshop 2	£27(d)
Poster	£85(d)
Jigsaw	£27(d)
Jiglet	£27(d)
Snippet	£27(d)
Desktop Folio	£85(c)
Poster	£79c)
Special offer Rhapsody	£35(c)

EMULATED PACKAGES

View/Viewsheet/ Viewstore	each £47(d)
Intersheet/chart	each £30(d)
Wordwise	each £25(d)

ART/GRAPHICS/CAD

AutoSketch 2	£65(c)
ProArtisan	£70(c)
Arcol	£49(c)
Atelier	£65(c)
Gammaplot	£39(c)
Presenter II	£35(c)
Graph Box	£55(c)
Gamma Plot	£35(c)
Render Bender	£55(c)
Revelation	£69(c)
TABS	£89(c)

SILICON VISION

SolidCAD	£80(c)
Realtime Graphics	
Language	£60(c)
Super Dump	£15(d)
Solids Render	£80(c)
FilmMaker	£60(c)
Presentation Manager	£30(c)
RISC BASIC	£80(C)
Financial Accountant	£100(c)
Special Offer CHESS 3D only	**£18(d)**

MASTER SERIES AND ACCESSORIES

MASTER SERIES

BBC Master 128	£379(a)
Microvitec 1431 Std Res 14"	£169(a)
Philips CM8833 Med Res 14"	£209(a)
Rom Cartridge	£13(d)
32K RAM Cartridge and Utilities	£12(d)
Turbo Module	£115(b)
New Master OS Rom	£39(d)
IEEE Interface	£229(b)

We carry a full range of software and accessories for BBC B and Master as well as spares and upgrades.

Acorn 1772 DFS kit for BBC B	£49(d)

ECONET ACCESSORIES

Econet Starter Kit	£85(b)
Econet Socket Kit	£29(c)
Econet Bridge	£174(b)
Filestore Hard Disc E40S	£799(a)
Econet module	£49(c)
LEVEL 4 FILE SERVER	£189(d)
Econet Bridge	£174(b)
Printer Server Rom	£41(d)
10 Station Lead Set	£34(d)
Master FS Utility Disc	£17.25(d)
Disc Sharer (for ARC)	£135(d)
Printer Spoolr (ARC)	£80(d)

Econet Referral Centre Installation & Consultant

DISC DRIVES

5.25" Single Drives 40/80 switchable:

TS400 400K/640K **£80(b)**

PS400 400K/640K with integral mains power supply **£90(b)**

5.25" Dual Drives 40/80 switchable:

TD800 800K/1280K **£160(b)**

PD800 800K/1280K with integral mains power supply **£160(b)**

PD800P 800K/1280K with integral mains power supply and monitor stand **£179(a)**

PD400/PS351 are Compact/Archimedes compatible.

PD800/PD352/PD853 are Archimedes compatible.

3.5" 80T DS Drives

PS351 3.5 single drive with integral mains power supply in a 5.25" case. **£95(b)**

TD352 Dual 800K/1280K **£126(a)**

PS352 3.5" dual drive with integral mains power supply in a 5.25" case. **£139(a)**

techno CAD for Master 128

technoCAD will meet the needs of most professional applications and it is an ideal tool for teaching CAD in technical schools, CDT departments and collages. **£50(c)**

NOVACAD

Computer Aided Draughting System for BBC

Novacad can drive a plotter to produce drawings of highest quality ... Novacad is excellent. It is flexible, genuinely easy to operate without much practice, ... and a pleasure to use. Deebug Dec86

NOVACAD T/m version	£39(d)
NOVACAD T/m Plotter DG	£49(c)
Plotter Driver Generator	£12(d)

EPROMRYTER

★ Highly sophisticated & Advanced Programmer
★ All current single rail eproms handled
★ State of the Art Programming Algorithms

The single rail eproms handled by the EpromRyter are:

● 2716 2732 2764 27128 27256 27512 27513 27011 2516 2532 2564 2564 (NMOS & CMOS)
● One time eproms P27XXX, 87CXXX etc.
● Also A suffix eproms such s 27XXXA

for Master & BBC **£49(b)**

TEL: 081-205 9558

Watford Electronics

(A member of the Jessa group of Companies – Established 1972)



Jessa House, 250 Lower High Street, Watford WD1 2AN, England

Tel: Watford (0923) 37774 Tlx: 8956095 Fax: (0923) 33642



The sign of Quality

Shop Hours: 9am to 6pm (Mon.-Sat.) Thursday 9am to 8pm. FREE customer car park.

All prices exclusive of VAT; subject to change without notice & available on request.

The choice of Experience

Archimedes micro

System	Basic	Mono	Colour	Multiscan
410/1	£1099	£1159	£1269	£1448
420/1	£1299	£1359	£1469	£1648
440/1	£1699	£1759	£1869	£2048
540/1	£2995	£3065	£3169	

Archimedes A3000

12 MONTHS FREE MAINTENANCE ON SITE

- A3000 Microcomputer **£599**
- A3000 + Learning Curve pack **£699**
- 3.5" External Drive **£99**
- Monitor Stand **£16**
- Technical Manual **£60**
- SCSI Card **£149**
- A3000 Dust Cover **£5**
- Serial Upgrade **£17**
- A3000 plus Monitor Dust Cover **£9**
- A3000 User Port/Midi Upgrade Card **£44**
- A3000 User/Analogue/IIC I/O Card **£42**
- A3000 External Podule Case **£13**

Unbeatable Sale Offers on Archimedes Micro

When you purchase an Archimedes Micro from Watford, look what you get FREE with it

Micro	Free Offer
A410/1	Upgraded to 2MB RAM & 44MB IDE Hard Drive
A420/1	Upgraded to 4MB RAM & 100MB IDE Hard Drive, MkII Learning Curve pack incl. Acorn DTP pack
A440/1	High Res 14" Multiscan Colour Monitor
540/1	High Res Multiscan Monitor & Panasonic KX-P1180 Printer
A3000	Upgraded to 2 Megabyte of RAM & a A3000 Monitor plinth.

+ 12 months FREE On-Site Maintenance

(P.S. Instead of the above Hardware upgrades on A410/1 & A420/1, we will fit the 30MHz Turbo Board if required. Please specify your requirement when ordering.)

Archi Accessories

- NEW Multitasking RISC OS **£29**
- 3.5" 800K 2nd Floppy Drive (305/310) **£118**
- 5.25" 800K external Floppy Drive **£85**
- I/O Podule (Analogue/User/1MHz bus) **£79**
- I/O Podule (Analogue/User/IIC Ports) **£42**
- MEMC 1A Upgrade **£42**
- MIDI add-on to I/O Podule **£27**
- MIDI Expansion Card **£65**
- Sound Sampler Mono (Armadillo) **£129**
- Sound Sampler Stereo /Midi (Armadillo) **£186**
- Chromalock Podule (Wild Vision) **£275**
- Econet Network Board **£42**
- Archimedes IEEE Interface Adaptor **£269**
- Dual RS232 Podule **£195**
- 16 bit parallel I/O Card **£195**
- Archi replacement mouse – New design **£32**
- PC Emulator NEW Faster Version **£85**
- Software Developers Toolbox **£149**
- Floating Point Unit **£455**
- SCSI Adaptor Expansion Card **£162**
- Keyboard Extension Lead **£6**
- 2 Podule Backplane **£25**
- 4 Podule Backplane **£38**
- Fan for above backplanes **£8**
- Risc Os Extras Software Disc **£5**
- Smoked Perspex Low profile Keyboard Cover **£8**
- Ethernet Card **£220**

NEW ARM 3 Turbo Card



Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £199. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.

Any competent A300 or A400/1 series micro owner can fit the upgrade himself, as we provide full fitting instructions and a special ARM chip extraction tool. However for A3000 micros and those not wishing to perform the upgrade themselves, we will collect, upgrade and return your micro by courier service, at an additional cost of £35.

(A300 and old A440 series owners please note – you will need to upgrade to MEMC1A for ARM3 to work.)

Launch Offer: Only £199

Archimedes RAM Upgrade

All our memory upgrades are simple to fit. No soldering required. Fitting instructions supplied.

- **R302**-A3000 – to 2MB RAM Upgrade **£39**
- **R303**-A3000 – to 2MB RAM Upgrade (expandable to 4MB) **£69**
- **R304**-A3000 – to 4MB RAM Upgrade **£159**
- **R311**-A305 – to 1MB RAM Upgrade **£50**
- **R312**-A305/310 – to 2MB RAM Upgrade **£215**
- **R314**-A305/310 – to 4MB RAM Upgrade **£405**
- **R412**-A410/1 – to 2MB RAM Upgrade **£35**
- **R413**-A420/1 – to 4MB RAM Upgrade **£64**
- **R414**-A410/1 – to 4MB RAM Upgrade **£98**
- **R810**-A410/1 – to 8MB RAM Upgrade **£599**
- **R820**-A420/1 – to 8MB RAM Upgrade **£569**
- **R840**-A440/1 – to 8MB RAM Upgrade **£499**
- **R814**-R140 – to 8MB RAM Upgrade **£499**

Archimedes Hard Disc

Watford's ST506 Hard disc drives for A310 & A410 series fit internally into the space provided. The 'simple to follow' fitting instructions supplied makes drive fitting very easy. All disc drives are auto parking. 40Meg & 53Meg drives are fast 24mS type, while 20MHz are 28mS.

P.S. A310 upgrades require a backplane and a fan.

- **3HDP** – Hard Disc Podule only **£135**
- **3HD20** – 20Meg H' Disc + Podule for 310 **£235**
- **3HD40** – 40Meg H' Disc + Podule for 310 **£345**
- **3HD50** – 53Meg H' Disc + Podule for 310 **£474**
- **4HD20** – 20Meg Hard Disc for 410 **£129**
- **4HD40** – 40Meg Hard Disc for 410 **£215**
- **4HD50** – 53Meg Hard Disc for 410 **£335**
- A3000 20Meg Hard Disc + Podule **£299**
- A3000 40Meg Hard Disc + Podule **£429**

For IDE Hard Disc turn to page 14

Convert your Archi 410 to a 420 or 440 with Watford's unique Upgrade Kits

UP10	to 2MB RAM + 20MB Hard Disc	**£165**
UP15	to 2MB RAM + 40MB Hard Disc	**£252**
UP20	to 4MB RAM + 20MB Hard Disc	**£232**
UP30	to 4MB RAM + 40MB Hard Disc	**£318**
UP40	to 4MB RAM + 53MB Hard Disc	**£438**

Archi Mouse Port Splitter

Our handy little splitter unit eliminates the risk of damaging your micro due to constant plugging and unplugging of the mouse by allowing you to connect both, a joystick and a mouse simultaneously to your Archimedes. **£15**

Graphics, Art, Design & Games

GRAPHICS

Atelier	**£65**
Artisan II	**£45**
Artisan Gallery	**£16**
Autosketch II	**£65**
Craftshop 1 & 2	**£28**
Euclid 2	**£50**
Graph Box	**£59**
HotLink Presenter	**£40**
Kermit	**£46**
Mogul	**£17**
Poster	**£79**
Pro Artisan	**£70**
Render Bender	**£58**
Snippet	**£21**
Tween	**£21**

GAMES

ArcPinball	**£18**
ARCticulate	**£19**
Apocalypse	**£15**
Arcade 3 Compil.	**£12**
Arcade Soccer	**£15**
Arc Pinball	**£18**
Arc Trivia	**£18**
Avon	**£16**
Ballerina	**£14**
Blowpipe	**£16**
Boogie Buggy	**£19**
Break 147	**£19**
Bug Hunter	**£14**
Caverns	**£14**
Chess 3D	**£14**
Chocks Away	**£14**
Chocks Away Extra	**£14**
Conqueror	**£18**
Cops	**£14**
Corruption	**£18**
Crisis	**£21**
Drop Ship	**£12**
Enthar Seven	**£21**
E-Type	**£14**
E-Type Designer	**£13**
E-Type Extra 100 miles	**£13**
Family Favourites	**£15**
Fireball 2	**£19**
Gumshoes	**£19**
Holed Out Designer	**£13**
Holed Out Golf	**£13**
Hostages	**£15**
Ibix the Viking	**£14**
Inertia	**£13**
Inter Dictor 2	**£26**
Iron Lord	**£15**
Jet Fighter	**£10**
Jiglet	**£25**
Jigsaw	**£27**
Magpie	**£39**
Man at Arms	**£16**
MahJong Patience	**£15**
Manchester United	**£19**
Nevryon	**£14**
Olympics	**£15**
Pipe Mania	**£17**
Pirate	**£16**
Power Band	**£18**
Puncman 1 & 2	**£16**
Puncman 3 & 4	**£16**
Pysanki	**£15**
Quazer	**£10**
Real McCoy	**£22**
Real McCoy 2	**£23**
Redshift	**£14**
Return to Doom	**£16**
Revelation	**£54**
Repton 3	**£15**
Rotor	**£19**
Saloon Cars	**£19**
Splice	**£25**
Sporting Triangles	**£24**
Star Trader	**£14**
Superior Golf	**£15**
Super Pool	**£19**
Talisman	**£12**
The Pawn	**£19**
Thundermonk	**£11**
Timewatch	**£24**
Trivial Pursuit	**£22**
Twin World	**£15**
U.I.M.	**£23**
White Magic	**£15**
White Magic 2	**£15**
Wimp Game	**£13**
Worldscape	**£16**

Miscellaneous

Ancestry	**£59**
Arccomm 2	**£38**
Arcterm 7	**£64**
Armadeus Sound	**£60**
BBC DFS Reader	**£6**
Broadcaster Loader	**£65**
Equasor	**£40**
FlexiFile	**£98**
Genesis	**£65**
Genesis 2	**£113**
Hearsay Comms Pack	**£50**
Investigator 2	**£22**
JX Archi Colour Printer Driver for Citizen & Star	**£15**
Numerator	**£66**
Presenter 2	**£35**
Presenter Story	**£145**
Rainforest	**£17**
Revelation	**£58**
Rhapsody in Blue 2	**£45**
Speech!	**£15**
The Victorian	**£17**
Toolkit (Clares)	**£35**
Touchtype	**£40**
Tracer	**£46**

Staff Vacancy

Watford Electronics are inviting Hardware and Software engineers to apply for positions in their new R & D team. Hardware engineers must be familiar with the Archimedes architecture and able to follow a project from conception to production. Software engineers should be proficient in ARM assembler or Acorn C, and able to write RISC OS applications and module code. Applicants should be well motivated and show experience in relevant areas. Qualifications are not as essential as your ability to produce innovative solutions to challenging problems. As a new member of the team you will be in a unique position to develop your career in a rewarding environment.
In the first instance forward your CV to Shiraz Jessa or Chris Honey.

Desk Top Publisher

Acorn's Archi DTP Package	**£108**
Impression 2 DTP Pack	**£130**
Impression Junior	**£72**
Tempest DTP Package	**£90**

Archimedes New Launch
See Pages 2, 3 & 14

Archi Wordprocessors

Pendown Archi	£48	Archie Spell Master	£25
Wordwise + Disc	£24	PD Spellchecker	£40
Image Writer	£25	View	£45
Interword Disc	£24	Graphic Writer	£19
1st Word Plus – 2	£63	EasyWord	£30

Databases

AlphaBase	£36	Multistore	£195
Knowledge Organiser	£42		

Spreadsheets

Intersheet Disc	£24	Viewsheet	£45
Sigmasheet	£39	Schema	£89

Business Graphics

GammaPlot	£39	Sigmaplot	£39
Interchart Disc	£17		

Integrated Packages

- Logistix £79 • Pipedream 3 £119
- Desktop Office – Database, Graphs & Charts, Wordprocessor Spreadsheet, Communications £98
- Desktop Folio – Wordprocessor, Desktop & Interactive Publishing. Ideal for school environment. £85

A3000 I/O Card (User, Analogue & IIC)

This NEW versatile I/O Card from Watford, fits inside the A3000 and includes an Analog to Digital Converter, a User Port, and an InterIC (IIC) connector.

The card allows many of the peripherals developed for the BBC to be used with the Archimedes A3000. The ADC and User Port have the same pin out and connectors as the BBC computers.

Extensive RISC OS software is supplied to provide BBC OSBYTE calls for support of the ADC and User Ports, including the BASIC keyword ADVAL. The software provides extended RISC OS support for separate interrupts from both the ADC and User Ports, permitting easy interrupt driven operation.

The card is provided with all the software in ROM and is automatically loaded when the machine is turned on.

Peripherals connected to the ports can obtain up to 500mA of power at +5V. A fuse is fitted to the card to protect the A3000 from damage arising from accidental short circuit of the power output.

The card is provided with an extensive manual explaining installation, all software commands, connector pin outs, hardware addresses and example programs.

Features
- An 8 bit User Port with a standard 20 way IDC connector, compatible with the User Port on the BBC computers and the Archimedes I/O Podule.
- A 10 bit Analog to Digital Converter with a standard 15 way D type connector, compatible with the ADC on the BBC range of computers and the Archimedes I/O podule.
- An InterIC (IIC) Port with a 5 pin DIN socket to connect the A3000 to external IIC devices.

£42

Can you afford to miss the Array of New products for the Archimedes Micro from Watford Electronics making their first public appearance at the BBC Acorn User Show? Our technical team will be pleased to demonstrate any of these products.

- A3000 ARM 3 Turbo Upgrade
- User port/Analogue & IIc Card
- A4 B&W Flatbed Hand Scanner
- Archi Colour Flatbed Scanner
- Archi Colour Hand Scanner
- Advanced Graphics Card
- VIDC Enhancer Boards
- IDE Hard Disc Controller Card
- IDE Plug-In Hard Card
- Infra Red Remote Control Mouse
- Aries AlphaScan Multisync Monitor

Silicon Vision

Gerber Plot	£95	Solids Render	£120
Solid CAD	£120	Solid Tools	£279
Super Plot	£28	Data Vision	£110
Super Dump	£22	Share Holder	£135
Arc PCB Professional			£275
Realtime Solids Modeller			£136

NEW Archimedes A300/A400 SCSI Hard Disc Offer
(while stocks last)

100MB Hard Disc Upgrade complete with Controller card, Cables, Formatter and Manuals

RRP: £999

Offer Price: £399

Archimedes to BBC Serial Link Mk 2

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers.
New RISC OS Version **Only £15**

Archimedes External Disc Drive Interface

With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. Fully Buffered Board. NO SOLDERING is involved. Supplied complete with necessary lead.
- A300/A3000 £21 • A400 £25

Special Education Prices

All education establishments qualify for special education prices on micros, etc. Please write in or telephone (0923) 37774 or 50335 for written quotation.

LANGUAGES (Archimedes)

ISO-PASCAL; FORTRAN 77			£77 each
Assembler; LISP; Prolog X			£149 each
ANSI C Rel. 3	£125	BASIC Compiler	£77
Cambridge Pascal	£60	Logotron Logo	£45
Macro Assembler	£40	Risc Basic	£120
Robo Logo	£69	Risc FORTH	£110

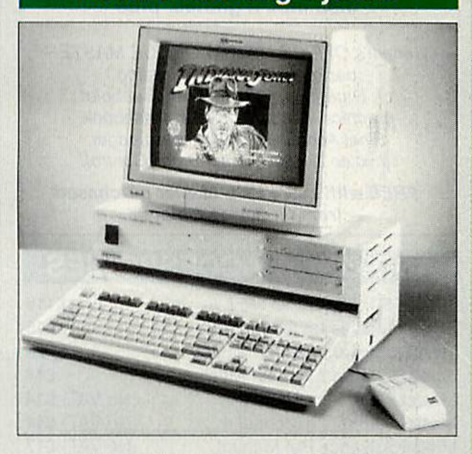
Minerva's Archimedes Software

Home Accounts*	£36	Sales Ledger*	£53
Stock Manager*	£53	Purchase Ledger*	£53
Nominal Ledger*	£53		
Ancestry	£59	Reporter	£29
System Delta+	£55	Mailshot*	£29
System Delta + Reference Manual			£25
Order Processing/Invoicing*			£53
School Administrator			£118

** Requires System Delta*

NEW Business Accounts Packages
Nominal Ledger, Order Processing/Invoicing, Purchase Ledger, Sales Ledger & Stock Control
Price: £78 per Module or
£299 for the complete Software Suite

ULTIMUM – Archimedes A3000 Podule Racking System



THE ONLY LOGICAL WAY TO EXPAND YOUR A3000 COMPUTER

The accepted standard for Archimedes computer expansion is the Acorn Podule, designed initially to fit the old 310, and also for the later A400 and A400/1 series micros. The podules fit inside these computers up to four at a time. The A3000 is the little brother of the family, but can only have one podule at a time, plugging into the back of the computer.
Other attempts have been made to expand the A3000 by trying to introduce a 'mini-podule'. This is impractical for many reasons, amongst which is the reluctance of manufacturers to produce them. Nobody wants to re-design podules already produced. Some cannot be produced on a 'mini-podule' as they are far too complicated and simply wouldn't fit.
Watford Electronics listens to the demands and requirements of its customers, and we are glad to say that we have come up with the only real solution to the A3000 expansion problem. The ULTIMUM Podule Racking System allows up to three FULL SIZE standard Archimedes 300/400 series podules to be fitted to the computer. In addition, there is also provision for a hard disc drive and a podule to be fitted internally.
Since the ULTIMUM Podule Racking System takes proper full size podules, you will be able to use any of the currently available peripheral equipment, from companies like Computer Concepts, Armadillo, Acorn and of course, our own brand.
Fitting the podules to 'ULTIMUM' is simple. They are neatly fitted inside the metal case of the rack, avoiding the previously untidy method of hanging the podule off the back of the computer, risking damage to both, it and to the computer.
'ULTIMUM' has its own power supply, so no strain is put on the A3000 power supply. There is also an IEC mains output socket for an Acorn type monitor so reducing the number of plugs required to go to the mains. The ULTIMUM is rigidly clamped over the top and under the computer, and allows direct access to the floppy disc drive and reset button, rather than obstructing access as on other systems. The mounting method employed is so firm that the computer could even be safely transported without the assembly falling apart.

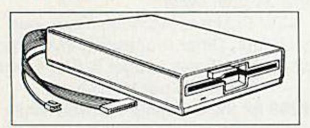
Price: £125

Continued→ → → → → → → → →

BBC MASTER

MASTER 128K Micro incl. Acorn's View, Viewsheet, ADFS, BASIC Editor & TERMINAL plus FREE OFFER (see below) **£399**

FREE OFFER



A 5.25" Double Sided, 40/80 track switchable 400K Disc Drive complete with cables and a Utilities disc incl. 2 games, plus

Gemini's OFFICE MATE & OFFICE MASTER packages on Disc consisting of: Database, Spreadsheet, Beebplot graphics. Accounts packs: Cashbook, Final Accounts, Mailist, Easyledger, Invoice & Statements, Stock Control.

FREE with every BBC Master purchased from us during October

ADD-ONs & ACCESSORIES

Turbo 65C102 Add-on Module		£115
Econet Module for the Master		£45
Twin ROM Cartridge for Master		£9
Quad ROM Cartridge for Master		£14
Master Reference Manual I	(No VAT)	£14
Master Reference Manual II	(No VAT)	£14
Master Advance Ref Manual	(No VAT)	£17
64K Upgrade Kit for B+		£32
Acorn 1772 DFS Kit complete		£49
ECONET Upgrade Kit for BBC B		£42
ALL ECONET UPGRADES Available		
ARIES' IEEE Interface for BBC B & Master		£238
Morley Teletext Adaptor with ATS Rom		£99
Ecolink		£270

Z88 Portable Micro



£185

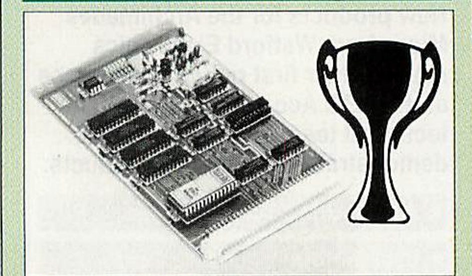
FREE

With every Z88 purchased from us, we are giving away absolutely FREE, a Z88 to BBC Interface Link, 4 rechargeable batteries and a compact Mains Battery Charger worth £38.

Z88 ACCESSORIES

• 32K RAM Pack or 32K EPROM Pack	£18.00
• 128K RAM Pack or 128K EPROM Pack	£42
• 512K RAM Pack	£175
• Z88 Eprom Eraser Unit	£33
• Z88 Spellmaster for Pipedream	£40
• Z88 Carrying Case	£8
• Z88 Computing Book	£9.95
• AA Nicad Rechargeable Battery	£1.50
• Battery Charger Compact & Fast	£6
• Z88 Serial Printer Cable	£8
• Z88 Parallel Printer Cable	£25
• Z88 to Archi Link	£15
• Z88 to BBC Link £20 • Z BASE	£56
• Z88 to PC Link II £30 • Z TAPE	£42
• Z88 to Macintosh £52 • Z TERM	£42
• Z88 Mains Adaptor £9 • Z88 Modem	£149

Archi Real-Time Digitiser



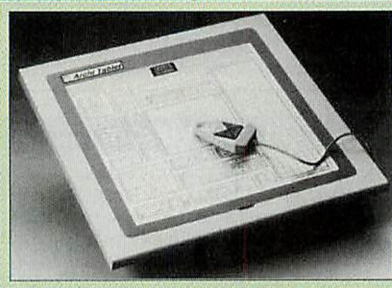
Now supplied with NEW RISC OS Version Software

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air televison signals may also be digitised via a video recorder or TV tuner. Please write for further details.

Price £175

A Set of Colour Filters for colour image grabbing using a video camera	£16
New Risc-OS Software Upgrade	£39

Archi Graphic Tablet



The Archi Graphic Tablet offers performance and accuracy comparable to other tablets priced at well over £400, and has the useful addition of a liftable cover, which can hold tracing material or menu templates securely. The package is supplied complete with sophisticated Archi software. (Now, fully LinCAD compatible. Recommended by Linear Graphic for use in Education).
(FREE this month, PC Mouse Drivers & Art package)

Special Price £199

(Price includes Tablet, Leads, Software & Puck)
Stylus Optional Extra **£15**

Archi Graphic Tablet Junior. Working area 9" x 6". Price includes Stylus **£125**

Disc Plonker Rack



When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk. Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs.

Protection at Only: £2

Acorn & Watford DFSs

• Watford sophisticated DFS ROM	£16.00
• Watford DFS Kit complete	£69.00
• We will exchange your existing ROM for Watford's ultimate DFS ROM at only	£12.00
• DFS Manual (comprehensive)	£6.95
• Acorn DNFS ROM	£17.00
• Acorn ADFS ROM only	£25.00
• Acorn 1772 DFS ROM Kit	£49.00

(The single Density DFS system is now old technology. Like Acorn, Watford too have decided to replace it with the their more up-to-date 1770 DDFS interface. We have informed most of the software houses of this decision in order that they can ensure compatibility with our highly sophisticated and fully Acorn compatible DDFS).

Watford's MkII 1772

Single/Double Density DFS

Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1770 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1770 DFS, plus the added features.

Added features include:

- Acorn ADFS compatible – Use ADFS on our DDFS board.
- Tube host Code – No longer any need to have the DNFS in your machine to use Co-Processors, even the CoPro and Master 512.
- Auto 40-80 Track sensing – no need to fuss with 40/80 track switches (even works with protected disks).
- An extremely powerful 8271 emulation – ensuring compatibility with almost all software.
- New low profile – small footprint board.
- Fits with all third party ROM boards.
- Option to double the speed of file handling operations – BPUT and BGET.
- Operates in both single and double density modes.
- OSGBPB has been recoded, increasing still further the speed of file handling.

Please note that not all DDFS's are capable of providing either the full 80% storage increase or of allowing a file the full size of the disk – Ours allows both of these!
If you already have a DDFS (any manufacturer), and wish to upgrade to our MkII version, then simply return your existing ROM and DDFS board and we will supply the new DDFS for only **£39.00.**

• SPECIAL PRICE	**£44.00**
• DDFS Manual (No VAT)	**£6.95**
• We will exchange your existing DFS Kit for our sophisticated DDFS for only	**£30.00**

Please note, as the MkII DDFS is a hardware and sofware upgrade, it is not possible for existing Watford DDFS users to simply exchange the ROM for the new version.



3M – Diskettes

3M – SCOTCH Diskettes with Lifetime warranty from Watford Electonics your 3M Appointed Distributor

• *10 x 5.25" S/S D/D 40T (744)*	*£5*
• *10 x 5.25" D/S D/D 40T (745)*	*£5*
• *10 x 5.25" S/S D/D 80 Track (746)*	*£7*
• *10 x 5.25" D/S D/D 80 Track (747)*	*£7*
• *10 x 5.25" 1.6M D/S D/D High Density for IBM XT and AT*	*£9*
• *10 x 3.5" S/S D/D 40/80 Track*	*£7*
• *10 x 3.5" D/S D/D 40/80 Track*	*£7*
• *10 x 3.5" Double Sided High Density*	*£13*



Top Quality 3.5" & 5.25" Diskettes

To complement our range of Quality Discs and Disc Drives. WE are now supplying SPECIAL OFFER packs of 10 Lifetime guaranteed discs. Each disc has a reinforced hub ring. Supplied complete with selfstick labels and a Plastic Library Disc Box.

• *10 x **M3** 3.5" D/S D/D 80 Track*	*£7*
• *10 x **M9** 3.5" D/S High Density*	*£12*
• *10 x **M4** 5.25" S/S D/D 40 Track*	*£5*
• *10 x **M5** 5.25" D/S D/D 40 Track*	*£5*
• *10 x **M7** 5.25" D/S D/D 80 Track*	*£7*
• *10 x **M8** 5.25" D/S H/D Hi-Density*	*£9*
• ***M2** 3" Double Sided*	*£2.50 each*

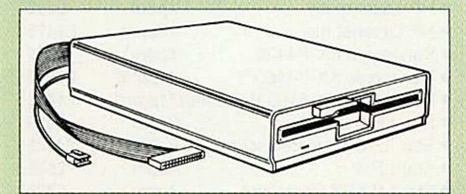


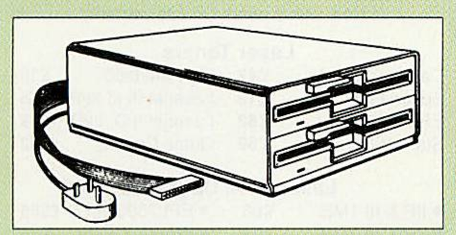
CREDIT CARD 24 HOUR Ansaphone Hot Lines (0923) 50234 or 33383

Quality Disc Drives from Watford

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. All 5.25" Disc Drives are 40/80 track switchable. For ease of use, the switches are front mounted. Various UK "manufacturers" of disc drives for the BBC Micro (more accurately, "packagers" label other manufacturers drives with their own name). We buy the high quality NEC and Mitsubishi drives in large quantities directly from the manufacturers, package them and sell them at "dealer" prices direct to the public.
If you look around the popular BBC Micro press, you will find that the prices we quote for the top quality, new slimline disc drives are, virtually without exception, the best around. These prices, coupled with the backup of one of the country's largest distributors of BBC peripherals provides a superb deal.
Unless you anticipate using dual drives in a fully expanded BBC system for long periods of time with little ventilation, then we suggest that our range of "CL" disc drives without the PSU (Power Supply Unit) would be quite adequate (extensive tests within our workshops have confirmed this). All drives are supplied complete with a SPECIAL UTILITIES Disc, Cables and Plugs. The Drives with power supply have a mains moulded plug for safety purposes. ***Ideal for Schools & Colleges.***
When using a BBC Micro, most people find themselves short of desk space. The Watford's BBC Micro plinths form an ideal way of recovering some of this precious space. Your BBC Disc Drive and Monitor can all occupy the same vertical footprint and still be comfortably situated. With the Watford Double Plinth, your Disc Drive is mounted vertically at one side, leaving a very valuable area directly in front of you for such useful items as spare discs, pen, paper, reference manuals, etc. Follow the trend with a Watford plinth. (Turn to the 6th page of our advert for the Plinths).
P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is our special Compact Disc Drive cables designed by us.

"Test Bureau Approved for Use in Education"



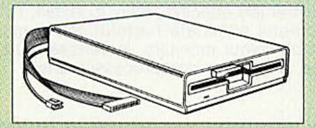


Our Disc Drives conform to BS415

Type	Description	
	Disc Drive without PSU	
• **CLS400S:**	Single, 40/80 track 400K Double sided Drive	£72
• **CLD800S:**	Twin, 40/80 track, 800K Double sided Drives	£142
	Disc Drive with PSU	
• **CS400S:**	Single, 40/80 track, 400K Double sided Drive	£82
• **CD800S:**	Twin, 40/80 track, 800K Double sided Drives	£155

Special Cable to connect both 3.5" and 5.25" Disc Drives simultaneously to the BBC Compact £13

Disc Drive/DDFS Offer



- The popular CLS400S 40/80 track switchable disc drive.
- Watford's popular Mk II DDFS Interface (allows up to 720K storage). Will run both in single & double density modes.
- A comprehensive DFS Operating manual

Bargain at Only **£116** (Offer valid until stocks last)

3.5" DISC DRIVE

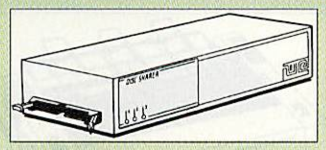


These top quality 3.5" Double sided, 80 track, are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

Type	Description	
	Disc Drive without PSU	
• **CLS35:**	Single Disc Drive, 400K	£62
• **CLD400S:**	Twin Disc Drives, 800K	£109
	Disc Drive with PSU	
• **CS35:**	Single Disc Drive, 400K	£83
• **CD35:**	Twin Disc Drives, 800K	£126

(P.S. CS35 is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage)

Disc Drive Sharer



(Ideal for educational establishments)
A low cost alternative to the Econet system.Watford's Intelligent Disc Drive Sharer allows you to connect 3 BBC Micros (model B, B+ and Master series) to a single or double disc drive. Running under any DFS or DDFS, this intelligent unit will automatically queue the computers. Each computer has a status light dedicated to it. If it is green you will get immediate access to the disk, and red means that you are next in line. The unit plugs directly into the disc drive socket on each computer and is powered by the mains. (N.B. Not for use with ADFS.)

Price includes 3 Cables £55

Disc Drives in Monitor Stand



• **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use.

£165

• **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5".

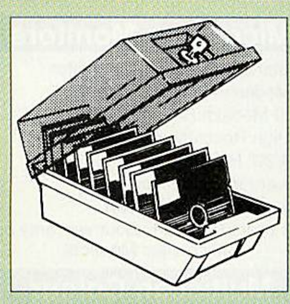
£154

Floppy Head Cleaner Kit

The heads in floppy drives are precision made and very sensitive to dirt. The use of Cleaner Kit is a sensible precaution against losing valuable data. It is recommended to clean the drive head once a week. it is very simple to use. Available in 3.5" & 5.25", please specify.

Price £4

Antistatic Lockable Disc Storage Units

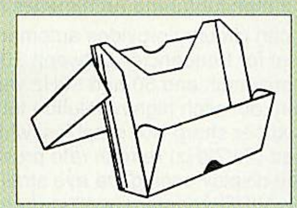


Gives double protection – Strong plastic case that affords real protection to your discs.
Antistatic helps avoid data corruption whilst in storage. The smoked top locks down.
Dividers and adhesive title strips are supplied for efficient filing of discs.

- **M35** – holds up to 50 5.25" discs £4.95
- **M85** – holds up to 95 5.25" discs £6.95
- **M25*** – holds up to 25 3.5" discs £4.95
- **M50** – holds 50 3.5" discs £6.50
- **M10** – holds 8 of No. 10 Data Cartridges £15

* Not lockable

Plastic Library Cases



Holds up to 10 x 3.5" Discs.	£1.50
Holds up to 10 x 5.25" Discs.	£2.00

Dust Covers (For our Disc Drives)

Single CLS (without PSU)	£3.20
Single CS (with PSU)	£3.25
Twin CLD (without PSU)	£3.85
Twin CD (with PSU)	£3.90

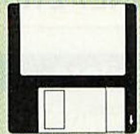
Disc Albums

Attractively finished in black leather-look vinyl. Stores up to 20 discs. Each disc can be seen through the clear view pocket.

£4

Special Bulk Offer on Discs

(Supplied packed in Anti-Static Lockable Storage Units)
(Lifetime warranty on Discs)

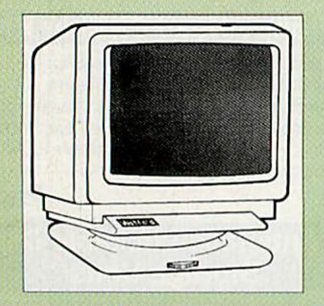




BULK PACK DISCS in lots of 100

Type	S/S 40T	D/S 40T	D/S 80T
• Without Sleeves 5.25"	£30	£35	£40
• With Sleeves 5.25"	£33	£38	£43
• 3.5" D/S D/D	£29 for 50		£52 for 100

Continued→ → → → → → → → →



Microvitec Monitors

- **1431** – Standard Resolution Monitor £169
- **1451** – Medium Resolution Monitor £209
- **Cub3000** Medium Res for A3000 £189
- **1441** – High Resolution Monitor £359
- **2040 CS** 20" Hi Res £675
- Dust Cover for Microvitecs £5.50
- **Touchtec 501 Touch Screen** £239

Now 3 years Parts & Labour warranty on all Microvitec Monitors

Multiscan Colour

• Eizo 9060S	£389	• NEC 5D	£1179
• Eizo 9070S	£579	• Taxan 770LR	£370
• NEC 2A	£245	• Taxan 775	£369
• NEC 3D	£323	• Taxan 795	£405
• NEC 4D	£629	• Taxan 875	£669

- VIDC Enhancer Board £25

(P.S. Taxan 795 monitor is supplied with a FREE VIDC enhancer board)



Aries AlphaScan Monitor

Pound for Pound, the AlphaScan VGA Multiscan monitor provides the maximum performance and greatest flexibility of any 14" colour monitor for the Archimedes micro.

Its multiscan circuitry provides automatic adjustment for frequencies between 30 and 60KHz horizontal, and 50 and 90Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The Multivideo VIDC Adaptor supplied (free) with the monitor allows high resolution operation in all screen modes.

£325

Philips Monitors

- **BM7502** 12" Hi-res Green Monitor £67
- **BM7522** 12" Hi-res Amber Monitor £67
- **CM8833** 14" Med. Res Colour Monitor £170
- TV Tuner for CM8833 Monitors £62

Dust Cover for Philips Monitors £6

FREE Swivel Base with Philips CM8833!

STAR BUY

- **PHILIPS 14"** Medium Res, dark glass, attractively finished Colour Monitor. A push-button switch toggles between Hi-Res monochrome green text mode and full colour display. (Please state the type of Connecting Lead you require).

ONLY £167

Refurbished Monitors

Philips 14" Refurbished Colour Monitors, same specification as the 'Star Buy' Monitors above £119
(Offer valid while stocks last)

Spare Monitor Leads

BNC Lead for Zenith or Philips	£3
Skart Monitor Lead	£5
RGB lead for TAXAN Monitors	£3
Archimedes Colour Monitor Lead	£7.50

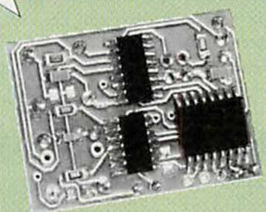
Anti Glare VDU Screen

These extremely effective, easy to install, 12" & 14" VDU screens eliminate harmful glare, improves contrast on colour monitors. Increases productivity in offices. A must for wordprocessor users.

£12



Watford VIDC Enhancer



This unique VIDC add-on board for the Archimedes, caters for all types of Multiscan and VGA monitor and mode requirements. There are 2 versions to suit all requirements. The multimode software supplied, provides all the new modes for the selected monitor type, including the now standard Computer Concepts modes. With VGA monitor, you are no longer restricted to a few modes. A WIMP application supplied on disc, allows new modes to be designed and existing modes to be modified for particular monitors.

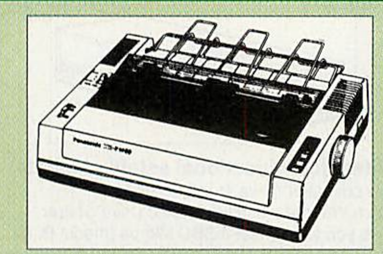
Super VGA VIDC Card: This provides support for both VGA and Multisync monitors. A unique electronic design allows the horizontal and vertical sync to be buffered and have the polarity changed under software control

£45

MultiVideo VIDC Card: As above but for MultiScan monitors only.

£25

Panasonic Printers



• **KX-P1081**	£105	• **KX-P1180**	£99
• **KX-P1123**	£144	• **KX-P1624**	£285
• **KX-P1124i**	£194	• **KX-P1654**	£399
• **KX-P1170**	£125	• **KX-P1695**	£285

Panasonic Accessories

Cut Sheet Feeders

KX-P1592/1595 (P32)	£175	KX-P1540 (P35)	£175
KX-1124 (P36)	£79	KX-P1180 (P37)	£66
KX-P1624/1695 (P38)	£124	KX-P1123 (P37)	£66

Buffers

P12 4K buffer Board for 1081	£55
P42 32K buffer Chip for 1592/1595	£16
P43 32K Buffer Chip for 1123/24/80	£16

Serial Interfaces

P17 P1081/1592	£32	**P19** P1124/1180	£49

Citizen Printers

120D Plus	£96	124D Printer	£139
Prodot 9	£196	Prodot 24	£219
Prodot 9X	£245	Swift 24	£205
Swift 9	£129	Swift 24X	£264

- Prodot Cut Sheet Feeder £120
- Swift 24 Colour Option £29
- Swift 24 Ribbons Black £4 Colour £13
- Swift 24X Cut Sheet Feeder £125
- Prodot 24 Cut Sheet Feeder £124

Integrex Colour Jet

- Colour Jet 132 Printer £499
- Paper Roll £6.50
- BBC Screen Dump Software £10
- Colour Cartridge £21
- Black Cartridge £12.40
- 100 A4 OHP transparencies £55
- 8K Serial Interface Optional £123

Star Printers

- **LC10** 9pin 80col. 144/36 CPS £105
- **LC15** 9pin 136col. 180/45 CPS £173
- **LC24-10** 24pin 80col. 180/60 CPS £143
- **LC24-15** 24pin 136col. 200/67 CPS £288
- **FR10** 9pin 300/76 CPS 31K 16 fonts £210
- **FR15** Wide carriage version of above £260
- **XB24-10** 24pin 80col. 240/80 CPS £269
- **XB24-15** 24pin 80col. 240/80 CPS £345
- **XB24-200** Colour 24pin 136col 300/100cps £309
- **XB24-250** Colour 24pin 136col 300/100cps £379
- **XB-24** Colour Kit £29
- **LC-200** Colour 9pin 80col. 180/45 CPS £152
- **LC-24-200** 24pin 80col. 222/67 CPS £180
- **LC24-200** Colour 24pin 80col. 222/67 CPS £217
- **SJ-48** StarJet 360dpi £209
- **ZA-200** Colour 9pin 80/136col 420/84cps £319

Star Accessories

Cut Sheet Feeder

LC10/200/24-10	£65	LC15/LC24-15	£125
XB24-10	£80	XB24-15	£139

Serial Interfaces

SPC-10 LC10; LC10-II; LC10-Col; LC15; LC24-10; LC24-15; LC-200; LC24-200 £49

8K Ser LC-200; LC24-200; FR10; FR15; XB24-10; XB24-15 £64

Paper Roll Holders

LC-200; LC24-200; LC24-200 colour £29

Buffers

32K Ram Card for LC/XB24-10; 15; LC200 £55

Ribbons

LC10; LC10-II; LC15	Black **£4;**	Colour **£6**
LC-200; LC24-200	Black **£5;**	Colour **£12**
XB24-10; XB24-15	Black **£5;**	Colour **£12**

Laser Printers

All Laser Printers include 12 months On-site maintenance

• Canon LBP-4	4ppm	£580
• Canon LBP-8 III	8ppm	£975
• Canon LBP-8 IIIR	8ppm	£1499
• Canon LBP-8 IIIT	8ppm	£1365
• Epson EPL7100	6ppm	£619
• HP Laserjet III	8ppm	£1019
• HP Laserjet IIID	8ppm	£1695
• HP Laserjet IIIP	4ppm	£689
• HP Laserjet IIIsi	16ppm	£2475
• Panasonic KX-P4420	8ppm*	£629
• Panasonic KX-P4450i*	11ppm*	£1015
• Panasonic KX-4455 Postscript	11ppm*	£1469
• Star LP-8 II	8ppm	£929
• Star LP-8 Star(post)script	8ppm	£1129
• Star LP-4	4ppm	£689
• Star LP-4PS Postscript	4ppm	£799

* Now with 2 years On-site warranty

Laser Toners

Canon 2, 3 & 4	£47	KX-P4420/50	£19
Epson GQ	£13	Laserjet III to III/P	£55
EPL7100	£82	Laserjet II/D, III/D	£48
Star LP-8	£69	Qume Crystal	£42

Laser RAM Upgrades

• IIP & III 1MB	£65	• EPL7000 2M	£365
• IIP & III 2MB	£97	• GQ5000 512K	£75
• II & IID 1MB	£64	• KX4420/50 1M	£89
• II & IID 2MB	£100	• KX4420/50 2M	£125
• II & IID 4MB	£155	• KX4420/50 4M	£215
• Canon LBP4 1M	£129	• Star LP8 1M	£139
• Canon LBP8 2M	£125	• Star LP8 2M	£275

Laser Drum & Developer

• Epson Drum GQ5000	£93	EPL7100	£129
• Panasonic 4420 Drum	£60	Developer	£59
• Panasonic 4450 Drum	£93	Developer	£80
• Qume Drum	£76	Developer	£56

Jetpage Postscript Cartridge

- HP IIP/III £239 IID & IIID £240

Various Add-Ons

Laserjet Appletalk Interface	£139
HP Adobe Postscript	£290
Pacific Page Postscript	£259
HP Premier Font Collection	£28
Jetfont Superset	£145

Hewlett-Packard Printers

• # Desk Jet 500	£285	• Paintjet XL	£999
• Desk Writer (Mac)	£480	• Quiet Jet Plus	£350
• Desk Jet Cartridge	£15	• HP Think Jet	£232
• Paint Jet Colour	£569	• Rugged Writer	£825

Now 3 years extended Parts & Labour warranty

- Paintjet Cartridges Black **£19;** Colour **£25**
- Desk Jet 500 256K RAM cartridge **£129**
- HP Epson FX Emulation Cartridge for Desk Jet **£59**

HP Apple Talk Interfaces for
- Scan Jet **£299** • Paint Jet **£POA**
- Desk Jet Unlimited (Book No VAT) **£19.75**

Canon Bubblejet Printers

	Printer	CSF	D'ble Bin	Ink Cart
BJ10E	£178	£43		£16
BJ300	£320	£88	£65	£12
BJ330	£374	£110	£79	£12

- Spare Battery pack for BJ10E **£33**

NEC Pinwriter Printers

• P20	£179	• P70	£448
• P30	£237	• P90	£646
• P60	£345		

Epson Printers

DFX5000	£1059	LQ860 Colour	£459
DFX8000	£1985	LQ1050+	£459
EX1000 Colour	£428	LQ1060 Colour	£609
FX850	£272	LQ2550+	£685
FX1050	£346	LX400	£105
FX1060	£595	LX850	£146
LQ400	£156	SQ850	£425
LQ550	£204	SQ2550	£628
LQ850+	£377		

Cut Sheet Feeders for

LX400/800/850/LQ400/500/550	£69
EX800/FX800/850/LQ800/850	£130
FX/LQ 1000/1050/SQ850	£159
LQ 2550 £390 SQ2550	£390

Tractor Feed for

LQ800 **£44;** LQ850/FX850 **£69;** LQ1050/FX1050 **£85;** LQ2500 **£90;** LQ2550 **£90.**

Accessories

- EX800/1000 Colour Option **£45**
- EX800/1000 Colour Ribbon **£14**
- LQ2500 Colour Option **£65**
- Multifont Card for LQ550/850/1050 **£95**

Epson Printer Interfaces

All these interfaces fit inside the printer

RS232	£32	RS232 + 2K Buffer	£52
IEEE 488	£95	RS232 + 8K Buffer	£75

Printer Leads

BBC Centronics 4' long	£5
BBC Centronics 6' extra long	£7
Compact's Special Centronics Lead	£7
Nimbus Centronics Lead	£6
IBM/Archimedes Parallel Lead 6'	£4
IBM/Archimedes Parallel Lead 5 metres	£10
IBM/Archimedes Parallel Lead 10 metres	£15
Double Ended 36 way Centronics Lead 4'	£7
Double Ended 36 way Centronics Lead 6'	£9
MSX Centronics Parallel Lead 4'	£12
RS232 Leads (Various)	P.O.A.
IBM Keyboard extension lead coiled	£5

Concept Keyboards

Standard A3 Keyboard with BBC Software	£143
Standard A4 Keyboard with BBC Software	£117
Archi A3 Keyboard	£144
Archi A4 Keyboard	£118



CREDIT CARD 24 HOUR Ansaphone Hot Lines (0923) 50234 or 33383

Plotters

• HP7440	£415	• HP7475	£599

Roland Plotters

• DXY1100	£499	• DXY1200	£629
• DXY1300	£830	• DXY2500	£2375
• DPX3500	£3289	• Sketchmate	£315

- Roland plotter Pens, Fibre tip **£7.50**

Listing Paper (Perforated)

• 1,000 Sheets 9.5" x 11" Fanfold Paper	£7
• 2,000 Sheets 9.5" x 11" Fanfold Paper	£11
• 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold	£21
• 1,000 Sheets 15" x 11" Fanfold Paper	£9
• 2,000 Sheets 15" x 11" Fanfold Paper	£16
• 1,000 Sheets true A4 Fanfold Paper 70gms	£11
• 2,000 Sheets true A4 Fanfold Paper 70gms	£21
• Teleprinter Roll (Econo paper)	£4

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).

Carriage 1K Sheets £2.50, 2K Sheets £3.00

Printer Labels

(On continuous fanfold backing sheet)

1,000 90 x 36mm (Single Row)	£6.00
1,000 90 x 36mm (Twin Row)	£6.25
1,000 90 x 49mm (Twin Row)	£7.50
1,000 102 x 36mm (Twin Row)	£6.75

Laser Printer Labels on A4 Sheets

3750 70 x 29mm (3 Rows)	£13.50
3000 70 x 37mm (3 Rows)	£13.25
2625 70 x 42mm (3 Rows)	£13.00

Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
Brother HR15/20	£6.00	–
BBC Micro	–	£3.50
BBC Master	–	£4.00
Archimedes Micro pair	–	£9.00
Citizen 120D	£2.75	£4.50
DMP2000	£2.75	£4.75
DMP4000	£3.75	£4.85
EX800/1000	£3.50	£5.00
RX/FX80/85/800/MX80	£2.95	–
FX/MX/RX100/1000	£3.95	–
Kaga/Taxan KP810/815	£3.25	£5.00
LQ400/500/550/800/850	£3.25	£6.00
LQ1050/LQ2500	£4.00	–
LX80/86/800/850	£2.75	£4.50
LX400	£3.50	£5.00
M1009/GLP	£2.95	£3.75
NEC P2200	£4.50	£5.00
Panasonic KX1080/81	£3.25	£4.75
Panasonic KX-P1124	£7.50	£5.00
SQ2500	£8.00	£5.50
Star LC10/NL10	£2.75	£5.00
Star LC24-10	£2.95	£6.00
Olivetti Ink Jet Cartridges (set of 4)	£6	

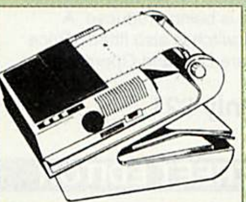
Original Panasonic Ribbons

Guaranteed to last 3 million characters

P110 for KX-P1081, 1592 & 1595 **£6**
P115 for KX-P1180 **£7** **P145** for KX-P1124 **£7**
P140 for KX-P1540 **£8** **P155** for KX-P1624 **£8**

Colour Ribbons for KX-P1081, 1592 & 1595
Brown, Blue or Red **£9 each**

Professional Printer Stand



The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergonomic design ensures smooth paper flow and automatic refolding.

80 Column version £24 (carr. £3)
132 Column version £29(carr. £4)

Universal Printer Sharers/Changer

Connect up to 5 Micros to 1 printer or 5 Printers to 1 Micro with our combined, Sharer/Changer. These Units are made to a very high standard. For extreme reliability, they all have Printed Circuit Boards mounted inside the case, (not a Spaghetti Junction of wires).

(Ideal for School environments)

Connects	Serial	Centronics
2 to 1	£16	£17
3 to 1	£22	£24
5 to 1	£32	£36

(Cables extra at £6 each. Please specify type required when ordering)

2 Way Compact Printer Switch

A handy 2 way printer switch. Enables one micro to be connected to 2 printers or vice versa.
Centronics **£18;** Serial **£17**
(Cables extra at £6 each)

Auto Printer Sharer Switch

Connects	Serial	Centronics
2 to 1	£40	£45
4 to 1	£62	£59
8 to 1	–	£89

256k Multi Spooler

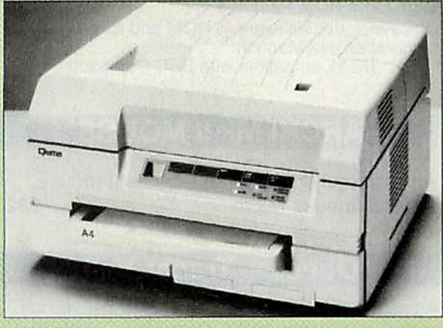
These Auto Centronics Printer Sharers have built-in 256K of Printer Buffers. They can be used as Auto Sharers, Printer Buffers or both.

- 2 In/2 out **£135** • 4 In/2 out **£169**
- 8 In/1 out **£199**

Compact Converter Units

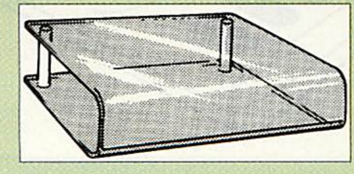
Serial to Parallel **£36** Parallel to Serial **£37**

Laser Direct



- Laser Direct Qume 6ppm complete **£825**
- Special High Res Card 600 DPI for Canon LPB 4 & LPB 8 Laser Printers **£325**
- LPB 4 Printer plus High Res Card **£899**
- LPB 8III Printer plus High Res Card **£1299**

Perspex Printer Stand

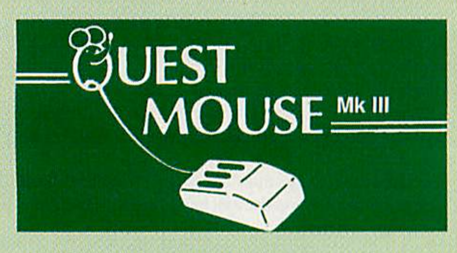


Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version **£16** (carr £3)
136 Column version **£20** (carr £4)

All prices are exclusive of VAT

Continued→ → → → → → → → → →



- Quest Mouse III & Quest Paint £59
- Quest Mouse III, Quest Paint, AMX Stop Press & Pagefont £89
- Quest Mouse III only £30
- Quest Paint Software only £34
- Quest Font Disc (22 Text Fonts) £15
- Quest Mouse Mat (Red or Blue or Green please specify) £3
- Quest Colour Dump Disc – This new software allows you to print direct from Quest Paint to your Integrex Colour Printer £18

(P.S. Quest Paint is not compatible with BBC Compact)

Quest Paint is the winner of the BBC Acorn User 1990 Award for the Best Art/Graphics software



Quest combined with ConQuest and Acornsoft GXR ROM make up THE MOST POWERFUL drawing packages available for the BBC range. Quest Paint is able to take advantage of almost any additions to your machine, such as Shadow or Sideways RAM. ConQuest takes this principal even further, by utilising the otherwise normally incompatible Sideways RAM facility by holding pictures in them.

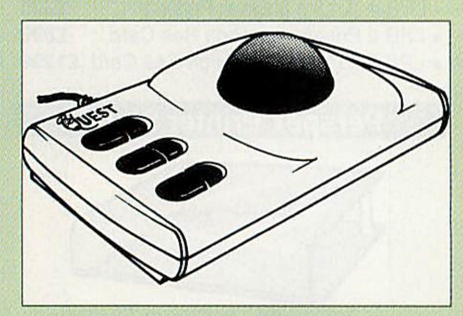
ConQuest ROM Package £30
(Price includes software in ROM and a comprehensive Manual).
(Not Compatible with BBC Compact)

ARCHI Mk II MOUSE

An extremely reliable replacement mouse for Archimedes Micro £32

Quest – Tracer ball

An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.



QT-10 BBC/Master Version **£27**
QT-20 Archimedes Version **£30**

RB2 Marconi TRACKER BALL

RB2 (AMX/Quest compatible)	£45
RB2 including Quest Paint	£75
RB2-A for Archimedes	£46

THE NEW Mk III AMX MOUSE

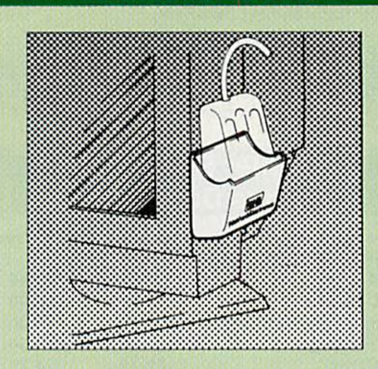
Inc. Super Art package

ONLY: £59 (carr £3)

(Please specify for BBC, Master or Compact)

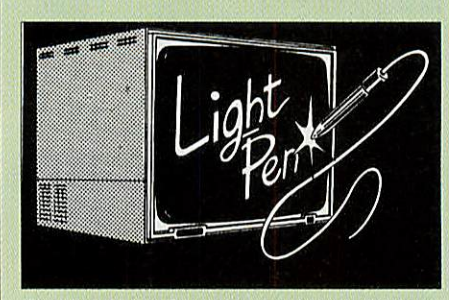
MOUSE MAT	£3
AMX MOUSE ONLY	£29
AMX SUPERART Package	£34
AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse	£32
PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker	£13
AMX DESIGN (ROM)	£55
AMX XAM Educational	£15
AMX EXTRA EXTRA	£16
AMX MAX A gem of desktop (ROM)	£20

WE Mouse House



Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive or desk.
It protects it from damage when not in use, yet within easy reach when you need it again. At £4 it does not cost a rodent's ransom.

Price £4



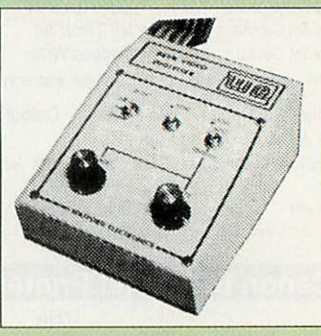
Our Mark II Light Pen is the very latest in light pen technology. It is totally insensitive to local lighting conditions and works with many different monitors. The pen only responds to the High Frequency light produced by your monitor/TV. An LED indicates when valid video data is being produced. A conveniently located switch is also fitted. (Price includes FREE software Disc and Operating Manual)

Only £21

FLEET STREET EDITOR

Software pack for BBC Micro	£33
Software pack for the Master	£39
Admin Xtra Disc Utility	£13
Fonts N Graphics Disc Utility	£13

BEEB VIDEO DIGITISER



"Test Bureau Approved for Use in Education"

Using any source of composite video (colour or monochrome) and the Watford Beeb Video Digitiser, you can convert an image from your camera into a graphics screen on the BBC Micro. This uses the full graphics capacity of the BBC micro in modes 0, 1 or 2. The video source may be a camera, video recorder or television, and is connected via the video output socket. The software supplied includes a sophisticated, fast screen dump routine.
Images produced can be compressed, stored to disc, printed on an Epson compatible printer, directly used to generate graphics, analysed for scientific and educational use or converted to other formats e.g. Slow Scan TV or receiving a picture from a remote camera using a modem. The output from the digitiser exactly matches the graphics capability in each mode, with up to 8 levels of grey in mode 2. The unit connects into the User Port and automatically scans a complete picture in 1.6 seconds.

£109 (Carr. £5)

(BBC B+ and Master compatible, except Master with Econet)

(Price includes) Digitiser Unit, Software in ROM & a Comprehensive Manual)

The Beeb HandScan

Hand-held Scanner for the BBC Micro



Watford Electronics are pleased to announce the launch of the first hand held scanner for the BBC Micro. HandScan is a compact unit which will allow photographs, diagrams, or any other documents to be digitised quickly and easily, to then be used in a desk top publishing package, art program, or even in your own Basic programs! These useful devices have been available for faster and more expensive micros for some time, but only now is Watford Electronics able to offer the BBC Micro computer.
The HandScan plugs directly into the 1MHz bus on the BBC while a comprehensive set of utilities provided by the sophisticated ROM firmware. The scanner has a resolution of either 100 DPI or 200 DPI when accuracy is essential. Pictures as wide as 4" may be scanned in mode 0 and various types of dithering may be selected to simulate the grey levels of a scanned picture.
All necessary software has been included in the firmware to allow the scanner to read images directly into our Wapping Editor with little more than the click of the mouse. The digitised picture may then be incorporated into your magazine, newsletter, report or any other document.

Beeb HandScan & Firmware **£135**



Winner of the BBC Acorn User 1990 Award for the Best DTP/Word Processor

The Wapping Editor

The Wapping Editor from Watford Electronics represents a breakthrough in Desktop Publishing for the Beeb. The package includes a 64K ROM containing ALL the software needed to get into print fast; a very sophisticated graphics module, professional quality typesetting software, a word processor, a comprehensive font editor for designing your own typefaces, and a variety of printer dumps. This mouse-driven system is designed for the BBC B, the B+ and Master computers and will take full advantage of any Sideways and Shadow RAM that may be fitted. It will run under DFS, ADFS and Network filing systems and requires as a minimum just a single 40 track drive.

Included with the system is a utility disc containing several high quality fonts, various utilities and a ROM image of a Support ROM. A comprehensive 100 page manual completes the package. The Support ROM contains routines to allow an area to be rotated to any angle or distorted to any four-sided shape. Also included are facilities to draw ellipses at any angle and sectors, segments and arcs (in Master or BBC B with Acorn GXR). Another of the features of the Support ROM is a 'Turbo DFS' which gives DFS access times comparable with those of ADFS.

Page Layout Section

The Wapping Editor may be used to create pages of any size from an A6 to a full A3 page. If none of the eight default page types suit your purpose, the stand-alone page creation program may be used to create pages to your own requirements. By using proportionally spaced fonts and genuine microspacing it is possible to print over 150 characters across an A4 page. A unique feature of the Wapping Editor is the 'A5 x 2' page size allowing two A5 pages to be printed side by side onto a single A4 sheet.

The graphics module incorporates the facilities like: pencil, brush, airbrush, polygon, circle, eclipse, fill, cut & paste, etc.

Text may be typeset, either justified or unjustified, in any font anywhere on the page. Simply select which font and text document you wish to use, and pull out a rectangle on the page where you want the text to be – it's as simple as that! Multiple columns may be printed just as easily and a special 'expand' feature may be used to expand the microspacing so that the document exactly fits the space defined.

Word-Processor

The integral word processor is the ideal tool for producing your text documents, although text can of course be read in from any of the other popular word processors such as View, Wordwise etc.

The Font Editor

The font editor module will allow you to design your own typefaces or to modify the ones provided on the utility disc. This sophisticated editor has numerous functions designed to take the tedium and frustration out of producing good looking, well balanced fonts. Each character may be individully proportionally spaced and characters of any size up to 16 x 16 pixels may be defined.
Pictures may also be 'grabbed' from a video source by using the Watford BEEB Video Digitiser.

Wapping Editor Software Pack	**£59**
Wapping Editor plus Mouse	**£79**

(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

Wapping Art Disc

Over 250K of clip art to cut and paste into your Wapping Editor pages. Pictures include maps, transport, people, media, sport, games etc.
Two 'ratio' screens for use with hi-res and rotated A5 pages to ensure images are not distorted when printed out.

Music writing symbols in the form of pattern and brush for quick production of manuscripts are included together with staves.

There are two prepared hi-res pages layed out for printing labels, both single and double width. Ready made label designs are included but these can be easily replaced with your own designs.

A Mode 0 screen dump routine is also included. To pack such a large amount of data onto the discs the screens have been compressed and routines to compress and expand Mode 0 screens are included on both discs. Using the packing routine you can archive large numbers of screens onto a single disc.

£15

Wapping Font Disc 1

Sixteen additional fonts, including smaller version of Oberon and Daisy and two new sizes of the standard font for the Wapping editor.
Also included are three Mode 0 screens containing giant 'headline' fonts to cut and paste to create extra smooth headlines.
Supplied complete with instructions.

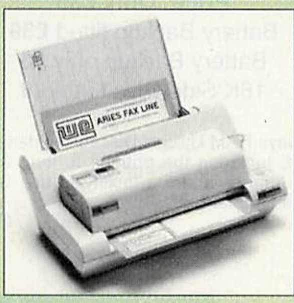
£12

Wapping Font Disc 2

This new addition to our Wapping range of DTP software provides you with additional 23 fonts for the Wapping Editor DTP pack. (80 track discs only).

£13

Archi A4 Scanner



This most advanced Archi A4 image scanner is supplied complete with ROM based podule software. Features provided include facilities for zooming in on an image and inverting the image in X and Y directions, saving and printing of the sprite created. Interactive help is supplied using the !HELP application on the Acorn applications discs.
The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, diagrams, etc., with its fast ten page automatic document feeder, but it can also detach from the feeder to become a convenient hand-held full page scanner for larger documents or pictures.
Scanned image control can be freely adjusted in increments of 10 dots per inch from 100 up to 400 dpi resolution with 64 levels of grey scaling. A built in shading controller and manual brightness control achieve optimum image clarity.
Unlike some scanners, which use a red light source, the Watford scanner uses a yellow/green source which vastly improves the light/dark contrast, thus eliminating the effect where any red-based colours are faded down to white and so do not show up in the scanned image.
All these features and facilities combine to make the Archi Page Scanner the fast and convenient way in which to add that extra impact, interest and clarity to documents, reports, instruction sheets, manuals, news letters, etc., from your Archimedes DTP package.

New Low Prices:

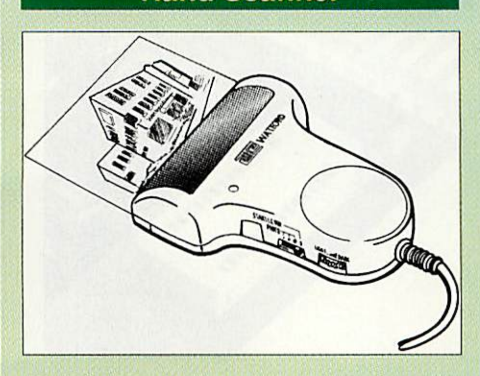
Archi A4 Scanner	£349
Sheet Feeder for above	£95
Scanner + Sheet Feeder	£419

(Dealers Inquiry welcome)

Computer Concept Scanlight

- Scan-Light A4 £375
- Scan-Light A$ + Sheet Feeder £475
- Scan-Light Junior mono £178
- Scan-Light Junior 256 £215

Archi Mk II Hand Scanner



Watford Electronics is now able to offer a complete hand held scanning package, possibly the most essential addition to any desk top publishing system, for only £149. The package includes the most comprehensive utility software available for the Archimedes, a high quality hand held scanner, and all necessary documentation to get you going straight away.

SCANNER

The scanner is capable of scanning up to an amazing 400 dots per inch (DPI)! The scanning area is 4" wide, and the height is only limited by the maximum amount of memory available. The dot resolution may be switched to 100, 200, 300 or the maximum 400 dpi. One of four operating modes may be selected offering either pure monochrome scanning, or one of three grey level modes. The grey level modes use different size dither patterns to represent up to 16 shades of grey. There is also a dial to allow the "brightness" to be adjusted over a wide range, in order to optimise the quality for any specific image. The scanner interface is a standard, single width, expansion card (podule) which plugs into the Archimedes' backplane. The socket on the rear panel connects the scanner by 1.8 metres of cable.

SCANNER SOFTWARE

Full use is made of the windowing and the multi-tasking facilities of RiscOS. The software is supplied in a 64Kbyte ROM located on the interface board. The scanner appears as a small icon on the desktop icon bar, and the software is retrieved from the ROM simply by clicking on that icon. As you scan a page, the image appears in the scanning window on the screen, scrolling up in real time. The other facilities included in the software are.

Cropping and scaling to any size including stretching and squashing in X and Y direction separately.

Colour tinting.
X and Y flip.

Edge detection which turns solid objects into outlines.

Selective directional copying which allows features (i.e. lines or text) to be made thicker or thinner.

Scanned images may be saved as sprite files or transferred directly into other RiscOS applications (DTP, Draw, Paint) simply by dragging the sprite file into the application's window. Sprites may also be generated using anti-aliasing. This greatly improves picture quality and is particularly effective when scanning material with a range of grey tones, such as photographs. Images can be printed on any printer that is supported by a RiscOS printer driver, with optional settings for portrait or landscape modes, image scale and positioning. Images are printed using the full resolution of the printer and are not limited to the screen resolution.

On-screen help is provided via the RiscOS interactive help facility. Calls are also provided in the ROM for users wishing to write their own software, incorporating the use of the scanner.

AHS-4 Archi 300/400 Version	**£149**
AHS-3 Archi A3000 Version	**£175**

Continued→ → → → → → → → → →

Sideways ROM ZIF Socket System



Allows you to change your ROMs quickly and efficiently, without opening the lid. The ZERO INSERTION FORCE (ZIF) socket is located into the ROM Cartridge's position.

- Very simple to install. NO SOLDERING required. The ZIF (Zero Insertion Force) eliminates the possibility of damage to your ROM pins when inserting & extracting.
- The low profile of the socket allows unrestricted access to the Keyboard.
- All data and address lines are correctly terminated to ensure correct operation of suitable ROMs with the BBC micro. We also supply a purpose designed see-through storage container with anti-static lining, allowing you to store up to 12 ROMs, protecting them from mechanical and static damage.
- This versatile hardware solves the problem of running out of socket space. Simply lift the ROM from the ZIF & insert a different one (No pulling or pushing of Cartridges. It is a must for professionals and Hobbyists alike.)
- BBC, B and B+ compatible.

ONLY **£18**

BBC B Low Profile Cartridge System

Complete System consists of: Low profile ROM Cartridge, Socket housing, Cable assembly, 5 labels and a library storage rack for the BBC B.

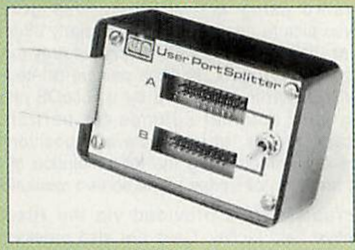
- Complete System **£11**
- Spare Cartridges **£2.75**
- Spare Rack **£1.65**

ROM Cartridges for the BBC Master

Will accept the new larger Piggy Back ROMs like: Interword, Interbase, Quest, Conquest, etc

Twin **£8**; Quad **£13**

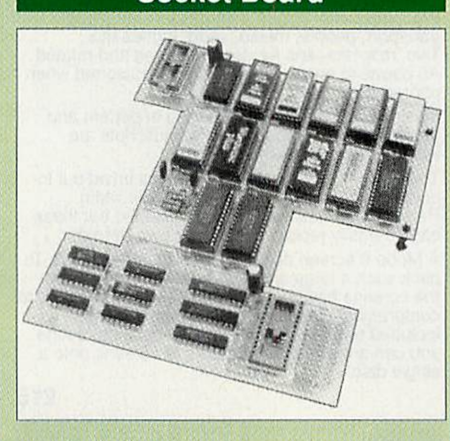
User Port Splitter Unit



Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows two units to be connected to the User Port simultaneously, and select between them simply by toggling a switch. This device is particularly useful for those people using Quest Mouse and the Watford Video Digitiser or any similar combination

Excellent Value at **£22**

Solderless Sideways ROM Socket Board



The key features of this new, no fuss, easy to install quality product from BBC leaders Watford Electronics are as follows:

- Increase your BBCs capacity for ROMs from 4 to 16.
- **No soldering required.**
- Very low power consumption.
- Minimal space required.
- Compatible with Torch, DDFS, RAM Card, 2nd Processor, etc.
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish") allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

Price: Only £35
Battery Backup fitted **£39**
Battery Backup only **£3**
16K Sideways RAM **£8**

- Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM Images and the facility to use Sideways RAM as Printer Buffer.

Only: £8



Commander Joystick

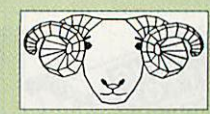


Watford Electronics' new Commander Joystick for the BBC B and Master 128K has a unique dual mode of operation giving selective free floating or self centring fully variable control in both X and Y axis directions. Commander is particularly good for flight simulation and drawing programs.

Features:

- Direct connection to BBC Analogue input port – no interface needed.
- Fully compatible with all BBC Joystick controlled games programmes.
- Switchable springs allow selection of floating or centring operation.
- Trim adjusters for both X and Y axes for fine centre adjustment.
- Convenient stick mounted fire button with additional base buttons.

Launch Price: £15



ARIES CORNER

B-32 Shadow RAM Card

Like the BBC B+, the B32 provides 20k of shadow screen RAM and 12k of sideways RAM. Unlike the B+, the B32 has simple software commands which allow the user to reconfigure the RAM as 16k of shadow RAM and 16k of sideways RAM, or all 32k as sideways RAM.

With the B32, the programmer gets up to 28k of RAM available for Basic, Logo, Cobal, Forth, Lisp and BCPL programs in any screen mode. The business user gets extra memory for View, ViewSheet, Wordwise Plus, Interword and many other applications. For advanced applications, the scientific user gets access to a massive 47k of data storage using the Acorn approved ★FX call.

Sideways RAM enables you to load sideways ROM images from disc, allowing you to have a large library of sideways ROMs (subject to the copyright holder's permission) stored on disc. The B32's sideways RAM can also be used to extend any operating system buffer (such as the printer buffer) or to load tape programs into a disc system.

The B32 simply plugs into the 6502 processor socket on you BBC micro – no flying leads to connect and no soldering. Provision of the onboard ROM socket means that the Aries-B32 control ROM does not use up one of your existing ROM sockets.

- Recommended by Computer Concepts for use with their Inter series of ROMs.

Price: **£59**

Aries B-12 Sideways ROM Board

The B-12 provides a total of twelve sideways ROM sockets (the four in the original machine are replaced by the twelve on the board), all fully accessible by the MOS sideways ROM system. In addition, there are two sockets for sideways RAM, giving up to 16k of RAM using 6264 static RAM chips.

If you do not have a B32 or B20, a small adaptor module (the Aries-B12C) is available at a nominal cost

Price:	Aries B-12	**£36**
	Aries B-12C	**£5**

Aries B-488 IEEE-488 Interface Unit

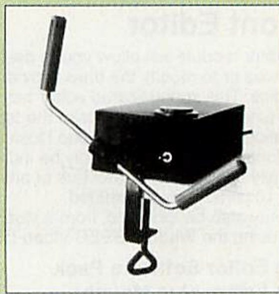
The Aries-B488 is an interface unit to enable the BBC micro to control and monitor IEEE-488 bus systems. The IEEE-488 bus (also known as the 'GPIB or 'HP IB') is the standard method of interconnecting programmable laboratory instruments and control equipment. Using the B488, up to 15 devices may be connected in a single high-speed data network.

£238

Voltmace Joysticks

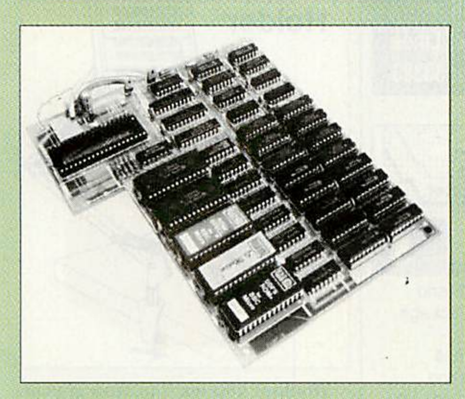
Delta 3B Single Joystick	**£10**
Delta 3B Twin Joysticks	**£15**
Delta 3C Joystick for Compact	**£10**
Delta 14B Single Joystick	**£11**
Delta 14B/1 Adaptor Module	**£12**
Transfer Software Disc-Tape	**£7**
Delta-Cat A mouse eliminator Joystick for the Archimedes	**£24**

Delta Base B



Analogue aircraft style yoke Joystick to run in the analogue port of the BBC B & Master 128 **£25**

ROM/RAM Card



Watford Electronics announced the first ever commercial ROM board for the BBC micro, the Watford Electronics 13 ROM Socket Board 7 years ago. Following the success of this board, we have designed what probably represents the ultimate in expansion boards, the new Watford Electronics ROM/RAM board. This highly versatile and sophisticated board represents the latest in "2nd generation" sideways ROM technology for the BBC micro, designed to satisfy the serious BBC user.

- NO SOLDERING required to fit the board.
- NO User Port corruption (avoids problems with the mouse, modems, Eprom Programmers, etc.)
- Fully buffered for peace of mind.
- Compatible with BBC micros (not BBC+ or Master).
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).
- Option for 16k of battery backed CMOS RAM (CMOS RAM needs one ROM socket).
- Software Write protect for ALL RAM.
- Read protect for CMOS RAM (ALLEVIATES crashes during ROM development).
- Separate RAM write register (&FF30 to &FF3F).
- Automatic write to currently selected RAM socket for convenience.
- FREE utilities disc packed with software.
- Compatible with our DDFS board, 32k RAM Card, Delta Card, sideways ZIF, etc.
- Large printer buffer.
- UNIQUE fully implemented RAM FILING SYSTEM (similar to the popular Watford DFS).
- ROM to RAM load and save facilities.

The SFS (Silicon Filing System) can utilise up to the full 128k of RAM (with the SFS in any paged RAM) as a SILICON DISC. This behaves as a disc drive, with all the normal Watford DFS features (including OSWORD &7F for ROMSPELL, etc.) to provide an environment that looks like a disc but loads and saves MUCH faster.

The ROM-RAM Board plugs into the 6502 CPU socket. This leaves free all the existing ROM sockets, which can still be used normally.

Any ROM that can be plugged into the BBC micro's own ROM sockets may be used in the ROM-RAM Board.

The ROM-RAM Board is supplied with all ordered options fitted as standard. Upgrade kits (with full instructions) are available for all of the options, for later.

PRICES:

- ROM/RAM card with 32k dynamic RAM **£45**
- ROM/RAM card with 64k dynamic RAM **£59**
- ROM/RAM card with a massive 128k dynamic RAM **£99**

(carriage on ROM-RAM Card £3)

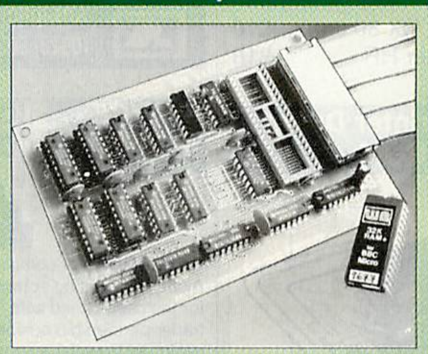
OPTIONAL EXTRAS:

- 16k plug-in Static RAM kit **£9**
- 16k Dynamic RAM for Upgrade **£13**
- Battery backup **£3**
- Read and Write protect switches **£2 each**

Complete ROM-RAM board
All options installed **£115**

P.S.
IS your existing ROM Board overflowing with ROMs? Do you need more Sideways RAM? Is your Board unreliable? Then upgrade to Watford, ROM/RAM Board and pay £5 less.

32K Shadow RAM/Printer Buffer Card Expansion Board



A MUST FOR WORD PROCESSING

Don't throw away your BBC B for a BBC B Plus or BBC Master. Just plug the ribbon cable into the 6502 processor socket, and fit the compact board inside the computer. Immediately you will gain not 16k or even 20k, but a massive 32k of extra RAM!!!

- IMPROVE your WORD PROCESSING system, whether disc or cassette based. Don't wait for a slow printer – type in text while printing. TWO JOBS DONE SIMULTANEOUSLY and £100+ saved on a printer buffer.
- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28,000 bytes free – 5 times as much as normal.
- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24k of text in memory. This product is recommended as an ideal complement by Computer Concepts.
- Combine GOOD GRAPHICS and LONG PROGRAMS. Use the top 20k of the expansion RAM as the screen display memory, leaving all the standard BBC RAM free for programs. Benefit from MODE 0/1/2 graphics and 28k of program space.
- Use the FULL 32k or the bottom 12k of the expansion RAM as a PRINTER buffer for PARALLEL or SERIAL printers, sound channels, RS432 etc. Print large text files while running long graphics programs, and have all your buffer options available as well (*FX15,21,138, 145,ADVAL etc). Please note only a 12k printer buffer can be used with Wordwise or Wordwise-Plus, due to the way they are written.
- Unique facility to turn ROMs off and on again. Unlike all other ROM managers, this feature does not use 'unofficial' memory. Two bytes of normally user-inaccessible memory on the RAM card are used to ensure ROMs are disabled WHERE OTHER ROMS FAIL.

Only £54 (carr £3)

(Price includes a comprehensive manual and the ROM)

BBC SOFTWARE'S Popular Educational Software

- Maths with a Story 1 (Disc). 4 primary level maths programs **£20.00**
- Maths with a Story 2 (Disc). 4 further maths programs. **£20.00**
- Picture Craft (Disc) 6-14 age group. Pack consists of flexible geometrical design & colouring programs. **£17.00**
- ECOLOGY O-Level program. **£20.00**
- POLYMERS O-Level program. **£20.00**
- Classification & Periodic Table O-Level. The suite is supplied with its own database of chemical elements which can be classified according to your own rule. **£20.00**
- ADVANCED TELETEXT SYSTEM **£8.65**
- PERIOD TABLE SOFTWARE **£20.00**
- Computers at Work – Primary **£17.35**
- Introducing Geography 11-17 years **£17.50**
- Electric Fields 6-14 years **£11.25**
- Espana Viva – 3 Discs **£19.95**
- WHITE KNIGHT Chess game **£16.00**
- A Vous La France **£29.00**

More Educational Software

- **FUN SCHOOL 2 – Red:** Under 6 yrs **£12.00**
- **FUN SCHOOL 2 – Green:** 6-8 yrs **£12.25**
- **FUN SCHOOL 2 – Blue:** 8 yrs+ . **£12.50**
- **FUN SCHOOL 3 – Red** **£19.95**
- **FUN SCHOOL 3 – Green** **£19.95**
- **FUN SCHOOL 3 – Blue** **£19.95**
- Six French Games – Aimed at pupils in their first year of French, but also useful as revision for more advanced students 11 years+ **£26**
- More French Games – Another 6 games 12 years+ **£26**
- Au Restaurant and Accident de Route 12 years+ **£26**
- Boulogne and Oh-Les – 2 programs for beginners **£26**
- Letters to French Penpals – 11 years+ **£26**
- French Programs with Henri Beret – The programs in this series present vocabulary, grammar and role-play phrases in the form of animated games. 11-16 **£22**
- Six German Games – Aimed at pupils in their first year, but useful as revision for more advanced student of German. 12 years+ **£22**
- More German Games – Aimed at pupils in their 2nd year of learning German. 12 years+ **£22**
- The Cloze Program – Using context clues to predict is much more than a gap filling exercise. All ages **£26**
- An Introduction to Electronics – Brings together all the basic electronics required for a GCSE Physics or CDT course. 14-16 years **£26**
- Computer Control – This is a package of 3 programs simulating control of a greenhouse, a robotic arm & a chemical plant. 14-16 years **£26**
- The Nuclear Reactor – An interactive, menu driven program for GCSE pupils. Demonstrates & explains nuclear fission & the chain reaction. 14-16 years **£22**
- PUNCMAN Learning punctuation
  Puncman 1 & 2 for 7 – 13 years **£15**
  Puncman 3 & 4 for 8 – 14 years **£15**
  Puncman 5 & 6 for 8 – 15 years **£15**
- Yes Chancellor – A chance to take over number 11 at Downing Street. 12 years+ **£18**
- Letters & Pictures – Introduces phonic skills to Infants 6-8 years **£15**
- Numbers & Pictures – Early number learning is a great fun (4-6 years) **£15**
- Note Invaders – Budding musicians can learn the notes on the Clef with this elegant game 3 programs (7 to Adults) **£15**
- Maps & landscapes No. 1 (9-14 years) **£18**
- Help Your Child learn Basic Map work No. 2 (9-14 years) **£18**
- Pirate – Educational Adventure (8-14 years) **£15**
- Spelling Week by Week (6-14 years) **£18**

Archimedes Software

- Bookbinder **£43**
- BUMPER DISC **£14**
- Bumper Disc 2 **£14**
- Craftshop 1 **£26**
- Craftshop 2 **£26**
- Desktop Stories **£35**
- DigiSim **£35**
- Droom **£19**
- Jiglet **£27**
- Jigsaw **£28**
- Numerator **£60**
- Snippet **£26**
- Fun School 2A Red (up to 6 years) **£12**
- Fun School 2A Green (6-8 years) **£14**
- Fun School 2A Blue (8 years +) **£14**
- Gate Array Teaching System **£68**

Continued→ → → → → → → → →

Computer Concept's ROMS

Communicator	£49
Disc Doctor	£22
Inter BASE	£49
Inter CHART	£25
Inter SHEET	£37
Inter WORD	£36
Mega-3 ROM	£76
Spell Master	£42
Wordwise	£24

Wordwise plus

£40

We are giving away absolutely **FREE,** the superb Word-Aid ROM worth £24, with every WORDWISE PLUS package bought from us.

Word-Aid

The most comprehensive utilities ROM for Wordwise-Plus

Extend the power of your Wordwise Plus word processor with this most advanced ROM from Watford. By utilising the powerful Wordwise Plus programming language, WordAid provides a whole host of extra features, all accessed via a special new menu option. This ROM has been personally approved by Mr Charles Moir, the author of WORDWISE PLUS.

- Alphabetical sorting of names and addresses.
- Text transfer options.
- Chapter marker.
- Epson printer codes function key option.
- Search and display in preview mode.
- Embedded command removal.
- Print Multiple copies of a document.
- Multiple file options for print and preview.
- Address finder.
- Label printer.
- Mail-merger.
- Number/delete/renumber.
- Clear test-segment area.
- BBC B, B+ and Master compatible.

Only **£24**

(N.B. Word Aid requires a Disc interface in your Micro)

Acorn ROMS

View 3.0 ROM	£45
Viewsheet (Acornsoft)	£36
Viewstore	£36
Viewspell with 80 track disc	£25
Viewplot Disc	£20
(Please specify for Master 128 or Compact)	
View-Index	£12
Overview packs 1 & 2	£65
Hi-View	£38

MINI OFFICE II

DISC Version for BBC B & B+	£14.00
DISC Version for BBC Master	£16.00
DISC Version for the Compact	£18.00

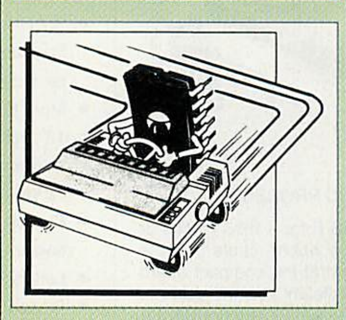
(When ordering please specify for which Micro & 40 or 80 track Disc)

All prices are exclusive of VAT

View Printer Driver Discs

Epson FX & RX 80	£10
Juki & Brother HR	£10

View Printer Driver ROM



View is a powerful word processor, but it seriously lacks in terms of printer driver support. With the View Printer Driver ROM, the View users will find themselves in the realms of advanced word processing.

The VPD extends View's printer command with a series of mnemonic commands. All standard highlight sequences are also supported. A large range of printers are supported by drivers contained within the ROM (the drivers can be downloaded and customised). Printers supported include: Epson's MX, RX, FX, LX, JX80 range, HI80, KP810/910, PW1080, JP101, HR15, M1009, GLP, Panasonic KX-P1081/2, JUKI 6100, etc.

Other printers are readily supported by defining a Printer Driver using the built-in Printer Driver Generator. The features mentioned below are available to both the built in Printer Drivers and user defined drivers (assuming the printer supports the features).

NLQ control, Underline, Bold, Proportional Spacing, Microspacing, Italic, Superscript, Subscript, Condensed, Enlarged, Double Strike, Set lines per inch numerically (e.g. LPI 6), Set characters per inch numerically (e.g. CPI 5), Select printer font, Select printer ribbon colour, Translation sequences, Emulation of BBC Character Set, Simple numeric expressions for certain operations, Full printer setup, Send control codes, Print prompt on screen, Redifinable Pad character, Pause for key press, Prompt to change daisywheel, and Execute ★ command when printing.

Other features include a very powerful on-screen preview, with bold, italic, underline, super/subscript, enlarged highlights, and a special printer driver to allow memory-based text to be previewed by View 1.4. Of course, View 1.4, 2.1 and 3.0 are all supported, as is Shadow RAM and 6502 Second Processors. The BBC B series and Master series of micros are supported. A comprehensive manual is supplied. All in all, a very professional product for the discerning user who wants power at their finger tips.

Price: Only £29



CREDIT CARD 24 HOUR Ansaphone Hot Lines (0923) 50234 or 33383

OFFICE MASTER



CASHBOOK – A complete "Stand Alone" accounting software package for the cash based sole trader/partnership business. It is designed to replace your existing cashbook system and will provide you with a computerised system complete to trial balance.

FINAL ACCOUNTS – Will take data prepared by the Cashbook module and produce a complete set of accounts as following: Trial Balance with inbuilt rounding routine; Notes to the accounts; VAT Summary; Profit & Loss A/C; Balance Sheet.

MAILIST – A very versatile program. Enables you to keep records of names and addresses and then print, examine, sort and find them, all with special selection techniques.

EASILEDGER – A management aid software tool designed to run alongside an existing accounting system. Essentially a Debit/Credit ledger system which can handle sales, purchase and nominal ledger routines to provide instant management information.

INVOICES & STATEMENTS – Greatly reduces the time and cost of preparing Invoices and Statements by storing essential information like customer names, addresses and account numbers. Has VAT routines and footer messages facility.

STOCK CONTROL – Allows you to enter stock received, stock out, summary of stock items and current holdings together with details of total cost, total stock to minimum level, units in stock ordering, quantity and supplier detail.

All this for only **£21** (Disc)

OFFICE MATE



- DATABASE
- BEEBCALC SPREADSHEET
- BEEBPLOT GRAPHICS

DATABASE – Set up a computerised card index system with powerful search facilities.

SPREADSHEET – Offers many calculation and editing features

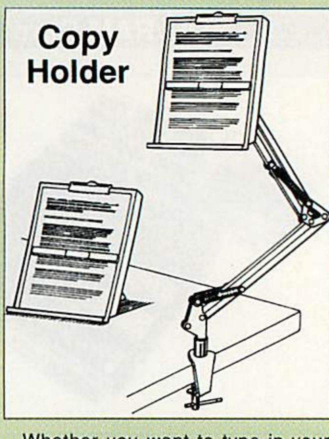
BEEBPLOT – Provides visual representation from Spreadsheet data.

Only £10 (Disc)

Acorn Speech Synthesizer package complete, for the BBC B Microcomputer

Special Offer £14

Copy Holder



Whether you want to type in your latest program or the draft of a new trilogy, Watford's manuscript holders are superb for holding your paper at the ideal height and angle to allow you to read and type in ease and comfort.

Available in 2 full A4 versions, desk resting and shelf clamping. Paper is held firmly by means of a plastic retaining ruler and a clip grip. (for resting books or magazines, the desk top version is recommended).

Desk Top **£7** (carr. £3)
Angle poise **£12** (carr. £3)

The Epson RX/FX/KAGA Printer Commands Revealed Handbook

Printer Commands Revealed

So you bought yourself a new printer, because the salesman in the shop showed you how clever it is and impressed you with all sorts of printouts to show its capabilities – he may even have offered you a special price.

However, now that you have got it home and connected it to your BBC microcomputer, you are wondering how to make it perform these magical tasks. The manual seems to give no clues, and when you type in the example programs, the computer throws the LPRINT statements back in your face.

Now what do you do, when this £400 piece of high technology refuses even to move its head, and you have stayed up until 2 in the morning with copious supplies of coffee, desperately trying to print something out? Once again, Watford Electronics comes to your help with our new book entitled 'THE EPSON FX-KAGA PRINTER COMMANDS REVEALED'.

This book describes in plain, easy to understand English, how to use and make the most of your KP810, PW1080A or any other Epson FX80 compatible printers like Panasonic KX-P1080/1, etc., with the BBC Micro, both from Basic and Wordwise.

It describes in detail how to obtain the maximum in graphics capability from your printer and includes full indexes allowing you to cross index the numerous commands. Every command is explained in detail, with an accompanying BBC Basic program and an example of its use from Wordwise.

£5.95 (No VAT)

ALL PRICES EXCLUDE VAT

BOOKS (No VAT on Books)

15 Hr Wordprocessing BBC/View	£6.95
15 Hr Wordprocessing BBC/WW & WW+	£6.95
30 Hour BASIC (BBC Micro)	£12.95
1st Word Plus Rel. 2 Manual	£10.00
A3000 Technical Manual	£29.00
Acorn DTP A Guide to	£17.00
Advanced User Guide for BBC	**£10.95**
Archimedes 1st Step – Beginners Guide	£9.95
Archimedes Assembly Language	£14.95
Archimedes BBC Basic Guide	£20
Archimedes DTP Manual	£10.00
Archimedes Operating System	£14.95
Archimedes Risc-Os Programmers Reference Manual	£79.00
Arm Assembly Lang. Prog. Manual	£15
Assembly Language Quick Ref.	£21.95
BASIC 2 – User Guide	£2
Basic V – A Dabhand Guide	£9.95
BBC Basic Guide (Archimedes)	£19.95
BBC Computer Handbook – The Complete	**£14.95**
BBC Micro – Within the	£11.95
BCPL User Guide	£9
C Big Red Book of	£8.95
C – A Dabhand Guide to	£14.95
C Programming Lang. 2nd Edition	£24.95
COMAL – Introduction to	£9.50
Deutsch Direkt! (Book only)	£5.95
DISC FILING SYSTEM (DFS) Operating Manual for BBC	**£6.95**
FORTH on the BBC Micro	£9.95
Hackers Handbook – New	£9.95
ISO-PASCAL Reference Manual	£9.95
Mastering Interpreters & Compilers	£14.95
Master 512 Guide – Dabs Press	£9.95
Master Operating System	£12.95
Master Reference Manual Part 1	£14
Master Reference Manual Part 2	£14
Master Reference Manual – Advanced	£17
Mathematical Programs in BBC BASIC	£9.95
MINI OFFICE II – A Dabhand Guide	£9.95
Mouse User Guide to BBC Micro – the Complete	£5.95
Example Programs on Disc for above	£4.95
PASCAL on the BBC Micro	£9.50
PASCAL Programming	£10.95
RISC Technical Manual 260 pg	£14.95
The Epson FX-KAGA PRINTER Commands REVEALED	**£5.95**
Understanding Interword – A Beginners Guide	£6.50
View 3.0 User Guide	£10
View Guide (View 2.1)	£5.00
View, Viewsheet & Viewstore – Mastering	£12.95
Viewsheet & Viewstore Dabhand Guide	£12.95
VIEW Dabhand Guide	£12.95
Viewsheet User Guide	£10
Viewstore User Guide	£10
Z88 – A Dabhand Guide	£14.95
Z88 Computing	£9.95
Z88 Magic	£14.95
Z88 Using Your	£9.95

BOOKS for IBM PC & Compatibles

1-2-3 For Business	£25.95
1-2-3 Mastering Release 3	£22.95
1-2-3 Mastering – 2nd Ed.	£20.95
1-2-3 Quick Reference	£7.95
1-2-3 Special Edition (QUE) – Using	£22.95
1-2-3 Using – Rel. 3	£25.95
8086/8088 Ass. Language Quick Ref	£8.45
8086/8088 Programming the	£17.95
Ability – Using	£12.95
Accountancy software in Business – Using	£14.95
Agenda – Using	£21.95
Aldus PageMaker – Using	£21.45
Amstrad 1512/1640 Step by Step – Using the	£POA
Amstrad Basic 2 User Guide	£9.95
Amstrad PC Programmers Ref Guide	£7.50
Amstrad PC1512-1640 Step by Step – Using	£10.95
Assembly Language – Quick Ref.	£7.95
Autocad 4th Ed – Mastering	£31.50
Autocad – Mastering Through Rel. 10	£28.95
Autocad – Inside Release 10	£27.95
Autocad – Inside 6th Ed	£32.45
C Introducing	£12.95
C Programming Language 2nd Ed	£26.95
C – Teach Yourself	£19.95
Clipper – Using	£22.95
Computer Users Dictionary	£9.95
Corel Draw Quick Ref Thro V1.2	£7.95
Corel Draw made easy	£24.95
dBase III Plus – Complete Reference	£19.95
dBase III Plus Handbook 2nd Edition	£22.95
dBase Instant Reference (III & III+)	£10.95
dBase IV – Handbook	£21.95
DOS & BIOS Function – Quick Ref Guide	£7.95
DOS Instant Reference (up to 3.3)	£6.95
DOS Power Tools (includes a disk)	£45.95
DOS – Programmers Ref. Manual 2nd Ed	£25.95
Excel IBM Version – Using the	£22.95
FAX – Managing with	£12.95
Framework III – Mastering	£22.95
GW Basic – Quick Prog. Ref	£8.95
GW Basic Users Guide & Ref	£12.95
Hard Disc management – Quick Reference Guide to	£4.95
Hard Disc – Using Your	£27.45
IBM PC & PS/2 3rd Ed	£21.70
Microsoft GW BASIC	£17.95
Microsoft Windows 3 – Using 2nd Ed	£20.95
Microsoft Windows Illustrated	£21.95
Microsoft Word 5 _ Using	£20.45
MS-DOS – ABC's of 2nd Ed.	£17.95
MS-DOS Bible 3rd Edition	£24.95
MS-DOS First Book	£15.50
MS DOS for Beginners	£14.95
MS-DOS Quick Prog Ref Guide	£8.95
MS-DOS Masters – Tricks of 2nd Ed	£24.95
MS-DOS – Running 4th edition	£19.95
MS-DOS – Supercharging 2nd Edition	£17.95
MS-DOS Users Guide 3rd Edition	£27.95
MS-DOS – Using	£19.95
MS Windows 3 2nd Ed – Using	£22.95
Netware User Guide	£22.95
Networking Personal Computers 3rd Ed.	£20.95
Norton Utilities – Inside the	£22.95
Novell Network – Mastering	£27.95
Novell Network – The ABC of	£21.95
Novell Network – Using	£27.45
PageMaker on IBM PC – Using	£22.95
Pagemaker – Using	£22.95
PCs & Compatible Computers for Beginners	£14.95
PC Crash Course 2.0 2nd Edition	£19.95
PC Tools – Quick Ref	£8.45
Programming Guide to EGA & VGA Cards	£25.95
Quattro – Mastering	£21.95
Quattro Pro VI – Using	£22.95
Smart – Using	£21.45
Smartware II – Using	£22.95
Smart, tips, tricks and traps (QUE)	£22.95
Supercalc 5 – Using	£27.50
Supercalc Professional	£17.95
Symphony Made Easy	£19.95
Symphony – Using Special Ed.	£27.45
Symphony 4th Edition – Mastering	£24.95
Turbo C Bible	£27.95
Turbo C++	£22.95
Turbo Pascal 5 – Using	£22.95
Turbo Pascal – Advance Techniques in	£22.95
Unix – Using	£27.45
Upgrading & Repairing PC's	£27.45
Ventura Mastering – 2nd Ed.	£22.95
Ventura Publisher – Using	£22.95
Ventura – Instant Reference	£10.95
Ventura – Tips & Tricks 2nd Ed.	£24.95
Window Programming 2nd Ed	£27.95
Window 3.0 Programming	£27.95
Window 3.0 Quick Ref.	£7.95
WORD for Windows – Using	£22.95
Wordperfect 5 – Using	£24.95
Wordperfect – Quick Reference V5	£8.95
Wordperfect 5.1 – ABC's of	£18.95
Wordperfect 5.1 – 1st Book of	£14.95
Wordperfect 5.1 – Mastering	£24.95
Wordperfect 5.1 Quick Start	£18.45
Wordperfect 5.1 – Using Special Ed	£25.95
Wordstar & CPM Made Easy	£15.75
Wordstar Using 5.5 & 6 3rd Ed	£25.95
Wordstar 6.0 Made Easy	£19.95
Wordstar 6.0 – Using	£25.95

Carriage on Books vary between £2 to £3.50, depending on their weight

New Release

ACORN TO PC

Stop the Confusion!

Do you have to use both Acorn computers and PC's? Would you like to use your Archimedes or A3000 in PC-emulation mode but are unsure of the new commands?

Although Acorn machines (such as the BBC B, the Master, the Archimedes and the BBC A3000) are mainly used in education, most commercial computers use other operating systems, particularly MS-DOS. As a result school computer users are at a disadvantage when moving into 'business' computing. PCs and other commercial computers use MS-DOS as the operating system, so commands for formatting, copying, backing up, printing and the modem are not the same. Even file names are written differently! And did you know that there is one Acorn command which, if used in MS-DOS, wipes everything in the current directory?

'ACORN TO PC' enables you to change over painlessly. It shows clearly and quicly how, why and where the two systems (Acorn and MS-DOS) differ. As with a foreign language dictionary, you can use the book to transfer either way – from Acorn to MS-DOS, or from MS-DOS to Acorn.

'ACORN TO PC' also acts as a handy reference guide to all Acorn star commands and their MS-DOS equivalents. It also has an extensive and readable explanation of the directory tree and hierarchical filing systems in general. Both DFS and ADFS Acorn systems are covered.

'ACORN TO PC' is written clearly and concisely by Dr. John Lockley, who has wide experience of writing and broadcasting. He is currently appearing as a regular contributor on Radio 5, and is co-author of 'The Complete BBC Computer User Handbook'.

Price: £15.95 (No VAT)

The Complete BBC Computer User Handbook

If you own a BBC B, B+, Electron, Master 128 or Master Compact, or Archimedes, then this is the book for you. It shows how to get the best from your machine, and how to make it work for you. The general style and level of presentation means that both the expert and beginner alike will feel comfortable with the quality and quantity of the material.

Subjects covered include the general use of computers, hardware design and peripheral devices like printers, disc drives, etc, and Networking. Programming hints and tips and various disciplines for making a better program are discussed in some detail, including debugging of specific errors. Standard programs are covered, such as wordprocessors, spreadsheets, databases, graphics, communications, etc., which brings you neatly on to the subject of using computers in the office or at work – even giving advice on writing and marketing your own programs.

A book you will enjoy to use as a reference, or read from cover to cover, over and over.

Only: **£14.95** (No VAT)

The Complete Mouse User Guide to BBC Micro

This manual has been written to reveal the secrets of the mouse. It explains all the principles required by the hardware and associated software, and also example listings for inclusion into custom programs. The manual first details the basic principles of the mouse and a simple program which uses these principles. This information should be adequate for most applications. However, it is possible to improve the performance of the mouse by expanding on the principles already used in the software. This is again fully explained and an example program given.

It is possible to gain a full understanding of the mouse from this manual. For those not interested in exactly how the mouse functions, complete example programs are also included. These may be typed directly into the micro, without the need for any understanding of the hardware or software involved, enabling the mouse to be used for custom applications.

Price £5.95 (No VAT)

Example programs on Disc £4.95

Beeb PC (BASIC)

Beeb PC Basic is designed for program authors wishing to convert programs so that they will run on IBM personal computers. To convert BBC BASIC programs manually can waste days of valuable time with every occurrence of common statements such as PROC, DEFPROC, TAB, having to be changed.

Beeb PC (BASIC) automates many of these changes, and will convert majority of BBC statements that are invalid for IBM BASIC into equivalent acceptable statements. In addition BBC BASIC data files can be converted to IBM BASIC format, with support provided for all BBC data formats:- INTEGER, REAL & STRING.

Price: £38

Beeb DOS 3.0

(Now reads Archimedes Discs)

The BBC and IBM PC's are the most popular micros in the UK. The BBC is firmly established in the education sector and the IBM is the industry standard in the business world. The pools of information and applications held on these computers are immense, yet the means of passing information between them are very limited. Beeb DOS provides a practical method of transferring information between these two micros.

Beeb DOS is a collection of utilities which run on the PC's and enable it to read and write information on BBC discs. You can transfer files between your PC's 360K floppy, high density floppy or hard disc and your BBC discs. In addition Beeb DOS allows you to catalogue, format and compact BBC discs and delete, re-name, lock and unlock BBC files, all on PC's.

Each Beeb DOS utility is written in IBM assembler and is run directly from PC or MS-DOS. The Beeb DOS utility can be run from floppy disc, hard disc or RAM drive.

Beeb DOS is supplied on an IBM 5.25", 360K disc complete with a comprehensive operating manual.

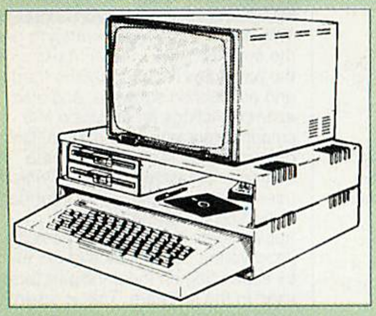
(Will only work on 360K Disk Drives & read only ADFS and Watford DDFS – not DFS).

Price: £39

(Please write in for technical literature)

Continued→ → → → → →

Plinths for the BBC B & Master 128K Micros

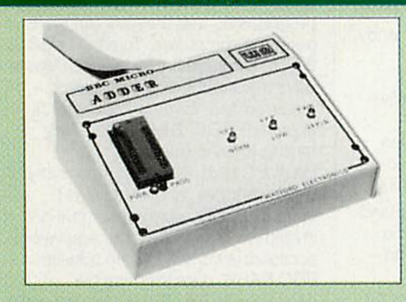


Protect your computer from the heat of your VDU. Our micro plinths have slots for maximum ventilation. The single plinth is suitable for a BBC and VDU, whilst the double height version provides enough room for our stacked disc drive and other peripherals like, Eprom programmer, music unit or simply discs & stationery. The computer slides neatly in the lower section allowing easy access to remove the lid. Colour: Matching BBC Beige.

Single BBC Plinth	420 x 310 x 105mm	£13
Double BBC Plinth	420 x 310 x 210mm	£24
Single Master Plinth	490 x 310 x 105mm	£14
Double Master Plinth	490 x 310 x 210mm	£26

(Carr. Single plinth £2; double plinth £3)

ADDER



The Adder unit connects to the User Port and draws its power from there too. The EPROM is mounted in a top quality ZIF socket. There are no switches or controls as Adder is entirely software controlled.

Features:

- Two ultra fast programming algorithms or standard slow algorithm.
- Supports standard 21V programming and newer 12.5 volt EPROMs. (Software switched).
- The RAM image to be programmed can be built up in many ways. Sections of image can be loaded separately. Part programming. Read EPROM. Edit data in memory.
- Automatic processing to handle a list of files to program into the EPROM.
- Automatic disc buffering to allow programming of 32K 27256 devices from a 32K file without extra effort.
- Verification gives detailed error list and checksums are maintained. There is also a blank check facility.
- Works with all standard filing systems. Generates header code for RFS ROMs to allow Basic programs etc. to be stored in EPROM. More than one file per ROM permitted.
- Programs the following EPROMs: 2516, 2716, 2532, 2732, 2764, 27128, & 27256.

£65 (£5 Carr)

TEX EPROM ERASERS

EPROMs need careful treatment if they are to survive their expected lifetime. Over erasure of EPROMs very rapidly turns them into ROMs! The TEX erasers operate following the manufacturers specifications to give the maximum possible working life by not erasing too fast.

- **ERASER EB** – Standard version erases up to 16 chips. **£34**
- **ERASER GT** – Deluxe version erases up to 18 chips. Has automatic safety cut-off to switch off the UV lamp when opened. **£36**
- Spare UV tubes. **£12**

CREDIT CARD 24 HOUR Ansaphone Hot Lines (0923) 50234 or 33383

Servisol Foam Cleaner

This king size multipurpose foam cleaner spray is ideal for cleaning Keyboard, Monitor, Disc Drive & Computer furniture surfaces.

£2.50

Antistatic Aerosol Spray

Ideal for cleaning and preventing static build-up on TV/Monitor Screens.

£2.50

Aerosol Dust Spray

Ideal for removing dust & dirt from Keyboard & similar inaccessible spaces. **£3**

Spares for BBC Micro

UHF Modulator	£4	16MHz Crystal	£2
Speaker Grill	£1	17.734 MHz Xtal	£2
Speaker	£3	32.768MHz Xtal	£1
Keyswitch	£1.50	BBC B Refurbish	
Master PSU	£59	Casing	£25
Master Keyboard	£62	Keyboard	£46
Master Casing	£49	Power Supply	£59

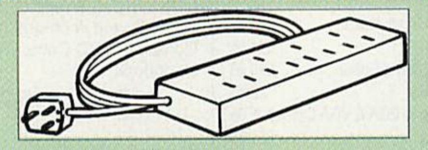
Replacement Flexible 17 way Keyboard Connector **£4**

Surge Protector Plug

Fitted in place of your normal mains plug, this device protects your equipment (and data from corruption), against mains high voltage translent spikes/surges caused by lightening or thermostats switching.

Protection for only **£8.50**

4 Way Mains Distribution Socket



4 way top quality mains trailing sockets. Supplied wired up with mains plug ready for use. Can be screwed to floor or wall if required. Very useful for tidying up all the mains leads from your peripherals.

£9.50

Aries Spike Cleaner Unit

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete Computer/Hi-Fi System

£14.95

ROM Extraction Tool

This extremely useful tool allows you trouble free chip insertion and removal from your computer by distributing the removal force over the whole body of any 24 or 28 pin chip. **£2**

Metal Chip Extractor **£3**

28pin DIL Header Plug

SOLDER type **£1.50** IDC CRIMP type **£1.95**

8 Way DIP Switch

Increase the speed of your Disc Drives by soldering this switch to your BBC B or B+ keyboard

Only **£1.00**

28 pin ZIF SOCKET (Textool) **£6.95**

Connecting Leads

(All ready made and tested)

CASSETTE LEADS 7 pin DIN Plug	
to 3 pin DIN Plug + 1 Jack Plug	£2.50
to 7 pin DIN Plug	£3.00
to 3 Jack Plugs	£2.50
6 pin DIN to 6 pin DIN Plug (RGB)	£3.00

Disc Drive Power Leads

Supply from BBC power supply to standard Disc Drive Connection: Single **£3.00;** Dual **£3.75**

Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable Single **£4** Twin **£6**

Miscellaneous Connectors

	Plugs	Sockets
RGB (6 PIN DIN)	50p	75p
RS423 (5 pin Domino)	70p	80p
Cassette (7 pin DIN)	40p	95p
ECONET (5 pin DIN)	35p	50p
Paddles (15 pin 'D')	150p	250p
Disc Drive Plug 4 way	100p	–
6 way Power Connector	120p	150p

Watford DATA DUCK

Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below).

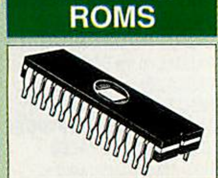
£14

Watford POWER DUCK **£8**

CHIP SHOP

1 MB-10 DIL D-RAM	£4.50
1 MB ZIP D-RAM	£4.90
256K x 4-8 DIP	£4.75
256K x 4-8 ZIP	£4.80
DS3691	£4.50
DS88LS120	£5.25
LM324	£0.45
SN76489	£5.50
SAA5050	£8.75
UPD7002	£6.00
2764-250nS	£3.00
27128A-250nS (12V5)	£2.50
27128-250nS (21V)	£4.00
27256-2	£3.00
27512-2	£4.50
27C101G (1 Meg)	£7.00
4013	75p
4020	£1.00
4164-10	£1.55
4464-10	£3.50
4816 RAM	£2.00
41256-8	£2.00
41256-10	£1.50
6264LP-8K	£4.00
6502A CPU	£5.00
65C02 3M	£9.75
65C12	£9.00
6512A	£10.00
6522	£4.00
6522A	£5.00
62256ALS-15	£10.00
62256P-12	£8.50
6818	£4.00
6845SP	£6.00
68B50	£2.95
68B54	£7.50
7438	50p
74LS00	50p
74LS04	50p
74LS10	50p
74LS123	£1.00
74LS163	£1.00
74LS244	£1.00
74LS245	£1.00
74ALS245	£2.75
74LS373	£1.00
74LS393	£1.00
75453	£1.00
75159	£3.00
9637	£2.00
ICL7673PA	£3.00

Assorted ROMS



ACORN ADFS	£25
ACORN BASIC 2 plus User Guide	£22
Acorn BCPL	£42
ACORN DNFS	£17
Acorn FORTH	£32
Acorn Graphics	£25
Acornsoft C Disc	£36
Acorn LISP	£19
Acorn OS B+	£25
Acorn OS 1.2	£14
Basic Editor	£24
BBC PCB Designer	£49
Beebmon	£22
Buffer & Backup	£20
Communicator	£49
Dump Out 3	£25
EPSON NLQ ROM	£25
Graphics Extension Rom	
GXR-B	£21
GXR-B+	£22
ICON Master	£28
Logotron LOGO	£43
MASTER OS ROM	£38
Master ULA (47)	£15
Master ULA (60)	£10
Micro Prolog	£25
Microtext Disc	£46
Microtext Rom	£199
NLQ DESIGNER	£25
Numerator – Archi	£69
Numerator – BBC	£39
Pendown ROM	£32
Rom Manager	£20
ROMIT	£29
SERIAL ULA	£13
TED	£35
Termulator B, B+	£28
Termulator Master	£32
Video ULA	£14
ULTRACALC II	£26
1Mb OS ROM	£39



Watford's NEW Innovative IDE interface card brings the latest advances in PC hard disc technology to within reach of the Archimedes user. Because of the integration of the controller and drive electronics onto one compact board, Watford Electronics have been able to include extra features into the drive, such as Caching, where tracks are buffered in fast memory, reducing access times and increasing throughput. All these benefits make IDE drives far more attractive than conventional ST506 drives or SCSI.

Watford's advanced interface allows IDE drives to work on any Archimedes machine, speeds in excess of SCSI devices can be obtained at a fraction of the cost of a SCSI drive.

Up to four drives are supported by the IDE filing system IDEFS, up to two drives can be attached to each expansion card, up to four cards can be installed in a machine. An optional 20Mb or 40Mb hard disc can be supplied on the podule expansion card itself, with its fast transfer rate and power saving modes the drive is ideal for storing commonly used software such as the !Fonts application.

A powerful security feature has been provided with the two unique commands *IDELock and *IDEUnlock, ideal for educational establishments where hacking or tempering may be prevalent that may lead to loss of data. Once locked, the configuration can not be changed until a secret password is used. The !IDEForm Write Protect option is particularly useful in conjunction with *IDELock as it will prevent any unauthorised deletion of data.

By an innovative use of on-board memory, the card will remember its configuration, even if moved to another slot or even a different machine, this also includes the unique security features.

Hardware

- Single width EuroCard
- Supports proposed ANSI ATA (IDE) specification
- Fast 16 bit MEMC interface interrupt driven to support background disc operations
- 5 Mbytes per second peak transfer rate
- Built in Non Volatile RAM to hold configuration
- LED activity indicator
- 37 way D type socket for external drives
- Optional on-card 20Mb or 40Mb hard disc
- Up to two drives (master and slave) per card
- Multiple cards per machine (up to four)

Software

- Conforms fully to the Acorn IDE Specification
- All software supplied in ROM
- Filing system 'IDEFS'
- Desktop filer with drive ready detection and disc name under icon
- !IDEForm, WIMP based configuration and formatting software
- Drives can be individually write protected
- Up to four drives over multiple cards
- Power saving standby modes supported with configurable timeout
- Drives can be used without translation in native mode for minimum overhead
- !IDEFSDisk, creates PC emulator hard discs

*Commands

*IDELock
*IDEUnlock
! DEFS
Selects the IDE filing system 'IDEFS'.
*IDEDrives
Displays the configuration and native characteristics of installed drives.
*Configure IDEFSDirCache
*Configure IDEFSBuffers
*Configure IDEFSDrive

Typical transfer speeds

Prairie Tek	20Mb	650K bytes per second
Seagate	43Mb	800K bytes per second

Prices

Part No.	Capacity	Access Speed	Price
ADA 0520	44Mb	28mS	£249
ADA 0530	100Mb	16mS	£395
ADA 0570	200Mb	15mS	£535
ADA 0580	330Mb	15mS	£POA

All the above 3.5" hard drives are supplied complete with Controller Card, cable & Software on ROM. (Internal fitting). For use with A300/A400/A500 series machines.

For A3000 users an additional external Case and PSU will be required.

AAA 0300 External Case & PSU for A3000 £85

Internal Hard Disc Drives for A3000

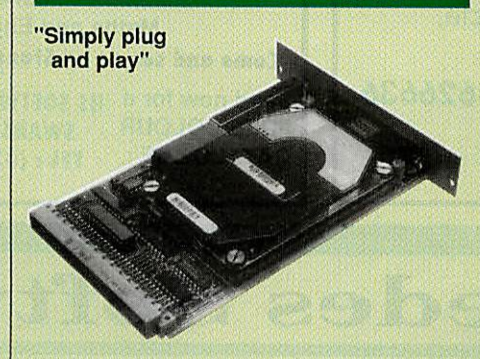
ADA 0700	21Mb	23mS		★£315
ADA 0720	44Mb	28mS	Available Soon	£TBA
ADA 0730	89Mb	18mS		£TBA

Supplied complete with Podule, Fan, Cable & Fitting instructions.

★ Tentative Launch Price

Archi IDE Hard Cards

"Simply plug and play"

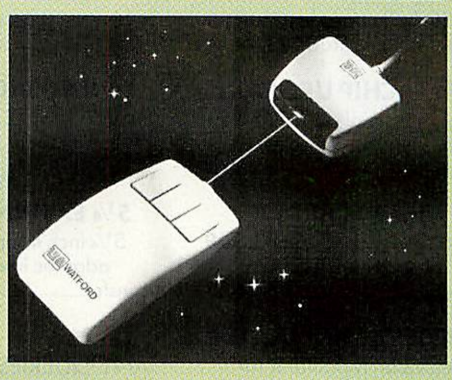


These revolutionary new hard cards for the A300 and A400 series Archimedes are unbelievably easy to install – you simply slot one into any vacant podule backplane slot in the rear of your computer. The fast 2.5" miniature hard drives are mounted onto the professionally designed cards, and are supplied with the fully Acorn-conformant IDE Filing System ready installed and ready to run. A novel feature of the hard cards is that they can be easily removed and transported to another Archimedes, for example to make a hard disc backup, or to transfer saved files from work to home etc. Security of files on the hard disc is ensured by our unique security password lock, which allows files to be read only, but not overwritten or deleted – ideal for use in school applications where the integrity of your master software needs to be retained.

ADA 0650	21Mb	23mS	£345
ADA 0660	44Mb	28mS	£495
ADA 0670	89Mb	18mS	£TBA

(Can be used as a Removable Hard Drive)

NEW Archimedes Cordless Mouse



Ever found that using a mouse on a busy desktop has its problems? The cable is always being caught up in papers, tangled round equipment and other cables etc, and what about that cup of coffee spilled over your work!

Watford Electronics' new Cordless Mouse solves these problems by removing the cause for concern - replacing the cable with a simple infra red link. It still provides all the speed and easy control of a conventional mouse, but with complete freedom. In use, there are no operating differences between the standard mouse and the new cordless mouse so all mouse functions and mouse driven RISC software will be fully compatible. Pinpoint accuracy is ensured by a unique Accelerator button, which, when pressed, moves the pointer by just a tiny amount for a large slow movement of the mouse, but by a large amount for a quick wizz of the mouse.

Features

- Infra Red Signal Transmission
- High Resolution 200 DPI
- High Tracking Speed of 600mm/s up
- Anti-static Silicon Rubber Coated Ball
- Low Friction Teflon Footpads
- Power - by two AAA size batteries (not included)
- Automatic Standby Mode after 5 seconds inactive
- Auto Power Shut-Down after 20 seconds inactive

Price £65

Watford Electronics are:

- Acorn Qualified Dealer & Econet Referral Centre
- ARIES PC Dealer/Distributor
- Canon Authorised Printer Dealer
- Cambridge Computer Dealer
- Computer Concept Premier Dealer
- EIZO Monitor Dealer
- Microvitec Appointed Dealer
- NEC Appointed Dealer
- Panasonic Premier Dealer
- Roland Plotter Official Dealer
- Star Printer Premier Dealer
- Taxan Appointed Monitor Dealer
- 3M Media Premier Distributor

Watford Electronics

250 Lower High Street, Watford WD1 2AN, England
Tel: 0923 37774/240588 Fax: (0923) 33642 Telex: 8956095

Prices subject to change without notice and available on request. ALL OFFERS subject to availability. Mail Order and RETAIL SHOP. Trade and Export inquiries welcome. Government and Educational Establishments' OFFICIAL ORDERS Accepted. Shop Hours: 9.00am to 6.00pm, Monday to Saturday. Thursdays 9am to 8pm. (Free Customer's Car Park). VAT: UK customers please add 17.5% VAT to cost incl. Carriage. CARRIAGE: Unless stated otherwise, minimum £3 on all orders. £4 on Larger items. On bulkier items, £7 Securicor charge applies (UK mainland only). Overseas orders, carriage is charged at cost. Specifications of all products are given in good faith but are subject to change without notice. Some items vary in their availability. Watford Electronics Terms and Conditions are available upon request. Please ring for latest delivery situation.



DAVE ACTON and **DAVE LAWRENCE** deliver their monthly mix of bits and pieces for your eight and 32-bit machines

COMPATIBILITY KEY

- B — BBC B compatible
- B+ — BBC B+ compatible
- M — Master compatible
- C — Master Compact compatible
- E — Electron compatible
- A — Archimedes compatible
- BBC A3000 compatible



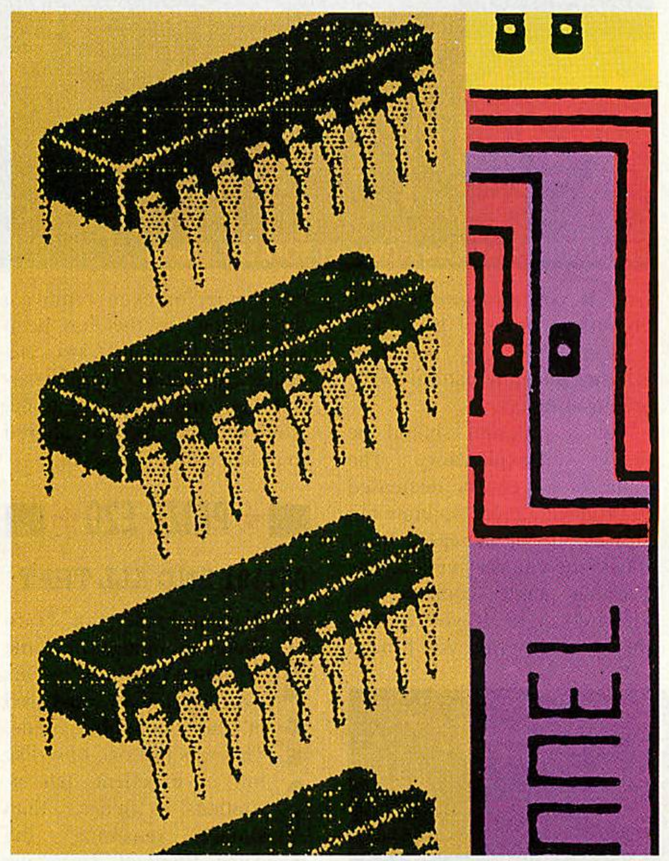
OVER ON BBC, TOO!

BAU regular, **Andrew Pepperell**, earns himself this month's top award for his BBC version of *WireWorld*. The original Archimedes version was written by **Peter Haynes** and appeared in issue 101 (December 1990).

WireWorld is a cellular automaton that mimics the behaviour of electrons within electrical circuits. From four basic cells it is possible to construct diodes, OR gates, inverters and, therefore, any other logic gate – even simple memory elements are possible.

Andrew has supplied two listings. First run WWsrc, which will assemble and save WWcode – the machine code needed by the main program (WWorld8). Upon running WWorld8, a four-item menu will be shown. From here you can load and save circuits, edit the current one or start the automaton proper.

In *Wireworld*'s editor, the arrow cursor can be moved with the usual Z, X, / and : keys. RETURN plots a piece of wire, H an electron head, T an electron tail. DELETE can be used to remove any of these. In addition, SHIFT-B clears the entire screen, SHIFT-W sets everything as 'wire' and SHIFT-R removes all the electron heads and tails (leaving them as wires). ESC will take you out of the editor (and also the main menu).



★INFO COMPATIBILITY TABLE

LISTING	NAME	BBC B	MASTER	ELECTRON	ARC
Info 1	WWSrc	★	★	★	
Info 2	WWorld8	★	★	★	
Info 3	SWAT	Not in the yellow pages, disc only			
Info 4	Surface	★	★	★	★
Info 5	LASrc				★
Info 6	Henon	★	★	★	★
Info 7	Creepy				★
Info 8	Rockets				★
Info 9	Bubbles				★
Info 10	Tree2	★	★	★	★
Info 11	Rope				★
Info 12	JDUP	★	★	★	★

When G is pressed, the animation starts. It will continue until you hold down ESC until the end of a frame.

The workings of both the Archimedes and eight-bit versions are identical, though the components have different internal values.

The main loop of the code first plots the current circuit on the screen and also copies it to a 'safe' area. This ensures that all the interactions between squares happen at exactly the same time. The grid is then examined piece by piece and the appropriate actions are taken. Blank squares still remain blank.

Electron tails become wires, electron heads become electron tails while wires need to examine their eight neighbours to determine their behaviour. If they have one or two surrounding electron heads then they themselves become heads. Any other value, meaning zero or more than two, and they remain as wires.

Like the Archimedes version, the current and 'old' grids are held in memory at one. The 32-bit version also holds the original unanimated grid. Space restrictions meant that this had to go! The only major difference is the speed. Although this can be partially attributed to the different processors, severe memory restrictions mean further cuts in speed.

The 80×64 grids have to be squashed into 1280 bytes with two bits used per square. Unfortunately the extra bit shuffling required to deal with this takes a heavy toll on the poor 6502. Likewise, the Archimedes version stores the screen address for each of the grid positions, while the BBC can only just manage the start of each line. Many routines within the code rely on this information so, regrettably, the speed of the automaton isn't up to that of the electrons it simulates!

ILLUSTRATION BY ANDY LOVELL

On a slightly different subject, Andrew was inspired by my sinusoidally scrolling text demo in the August issue of *BAU*, and has come up with a new program that takes a slightly different approach to the whole idea.

In *SWAT*, individual letters are altered to fit the sine wave, but there is no vertical movement of the letters as they scroll. Andrew merely supplied us with a *RUN-able program, so it is only available on the monthly disc. We would be very interested to see any other eight-bit demos that may be floating around out there – so anything the Archimedes can do...?

EIGHT-BIT USERS CAN NOW GET TOTALLY WIRED...

★PRIZE £20★

SURFACE MOUNTAINS

In May's Risc Revue, **James Gallagher** threw some light onto 3D plotting with a rather nice 'solid' surface program. Alas, being Risc Revue, this was Archimedes only. Six months on and, sure enough, here's the BBC version courtesy of **Paul McKenzie**. Needless to say, it's not quite as pretty as the 32-bit version, but Paul has used a monochrome palette so you'll actually get a better effect from a mono monitor or black and white TV! This is an old trick, but it's very effective. If you arrange the eight colours in order of brightness – 0, 4, 1, 5, 2, 6, 3, 7 – there is a rather uncanny pattern to the colour numbers.

Paul's program should be fairly self-explanatory. The value of step can be decreased to produce a more accurate but slower plot or increased for a quick and chunky version. The variable angle controls the viewing angle. If you change this, you may find you'll need to change (or even remove!) the shadow, as this has been rather bodged in! PROCplot deals with the 3D transformation and should be left alone. However, FNgy can be altered to produce different surfaces.



SEASONAL GRAPHICS FOR ARC USERS

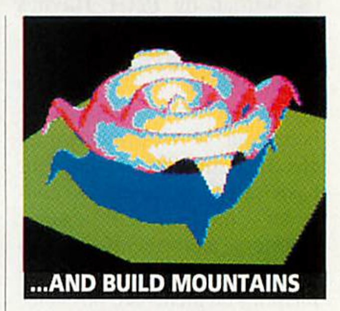
★PRIZE £20★

051191 AND ALL THAT

Regular readers of *Info should recognise the name of **Jan Vlietinck** – his *Coral* program appeared in the September issue. This was just one of a disc full of excellent demonstrations. Rather than simply renaming the magazine *Vlietinck User*, we plan to print the best of these over a number of issues. What with it being the November issue, we thought his *Rockets* program was the most appropriate.

There's not really much to say about the program – just type it in, light the blue touch paper and retreat to a safe distance with a toffee apple!

The program was designed to run on an Arm2 and you may find it runs a tad too fast with an Arm3 switched on.



...AND BUILD MOUNTAINS

★PRIZE £25★

THE HENON CURVE

Gareth Eley of Port Talbot has been fiddling away and come up with a short program that generates a map of the Henon Curve. Rather than wince my mords trying to explain the program myself, I'll let Gareth take the floor:

The program *Henon* generates a map of the Henon curve which is a two-dimensional map first encountered by the French astronomer Henon. It involves the development of two variables according to the two rules:

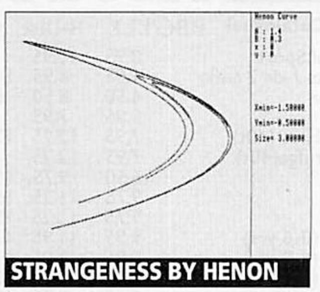
$$x' = 1 + y - A.x^2$$
$$y' = B.x$$

Where, in this case, A=1.4 and B=0.3 and x' and y' are

new values for x and y. This system is called a 'strange attractor'. Plotting a number of points iteratively starting from certain initial values produces a map. However, for certain initial values of x and y it tends to infinity (and the program produces an error). This was proved by Henon.

The system is an 'attractor' because all nearby points converge to it. It is called 'strange' because the object is not a simple shape like a point or a cycle of points but is fractal in nature. The exact structure of the map is not understood, even today.

Henon works on all Acorn machines and allows the user to investigate the map. You can also vary the initial starting values to verify that the same map (or an error) is produced for all values. The program also allows the constants A and B to be altered which will produce similar, but different curves.



STRANGENESS BY HENON

When run, the program will prompt you for values for A, B, x and y. Sensible defaults are shown and will be used if you simply press RETURN. The map will then be plotted. If the given values tend to infinity, the computer will beep and you'll be prompted for some different values. If the values are valid, 10,000 points will be plotted. This may take some time, especially on eight-bit machines, so you can press Q to abort the process.

At this point, an outline box will appear on the screen. This can be moved with the cursor keys and allows you to zoom into the curve. Its size can be varied with < and >. To plot the selected area press SPACE. Alternatively, Arc owners may use the mouse to move the zoom area. The right button reduces the area, the left button increases it and the middle button starts the plot. On either machine, R resets the screen to 'full zoom'.

Pressing ESC at any point will allow you to enter new values for the initial parameters, while CTRL-ESC quits.

Thanks, Gareth. Now we all know how it's done, perhaps we'll see some machine code versions with real-time panning and zooming or maybe a touch of colour?

CRASH COURSE

Here's a trio of, how shall we say, 'features' in Risc OS. The first and 'best' has been pointed out by **Dean Murphy** of Dublin. First, make sure all your data has been saved from the desktop (this feature is quite lethal!). Now pop up a menu, point to its title bar, hold down Select, take a deep breath and press ESC.

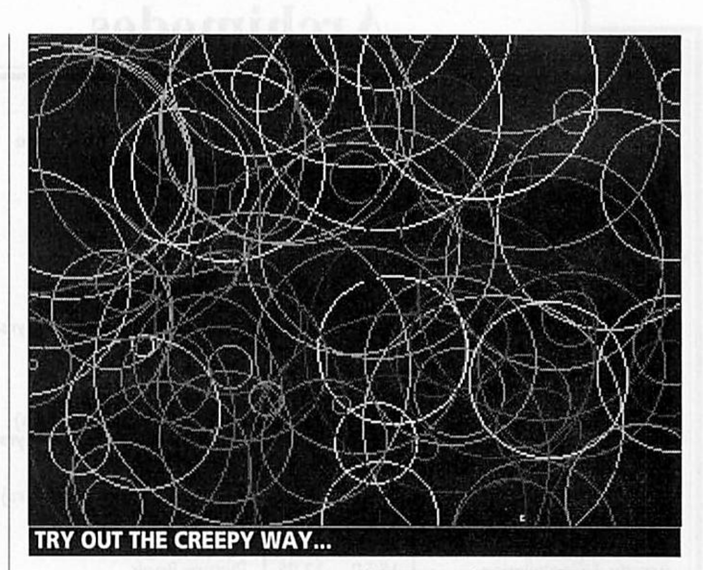
This normally causes address exceptions or abort on data transfers. If you're lucky it bombs out the 'owner' of menu! Repeated use is likely to upset the filer, the palette and even the switcher. I've even seen it knock out the icon bar completely.

Moving rapidly on... Certain versions of *Edit* (such as 0.64) can be crashed completely by loading them up and pressing F9 (Redo). I would guess that this is caused by *Edit* trying to redo nothing, as 'nothing' has yet to be done!

Finally, the *DeskTop command can take an optional -File parameter. This can be followed by a list of *commands to be passed to Wimp_StartTask. This is very handy for auto-starting commonly used applications. Personally, I run my Arm3 'kicker', visit my System and Fonts directories (so applications know where to find modules and the like) and load the desktop utility *Menon*.

This system worked fine until I installed a SCSI drive in addition to my internal ADFS hard disc. If the SCSI filing system had been selected with *SCSI, I was getting errors from applications claiming they couldn't find system modules or outline fonts. Close investigation of the system variables revealed that the System$Path and Font$Prefix variables did not contain 'adfs:' filing system prefixes or even my internal disc name (merely a solitary ':4'). It seems that *commands passed to Wimp_StartTask don't quite get the full treatment they deserve!

I've come up with a rather horrible patch to get round this problem, but I would be very interested (and relieved) to hear if anyone has a realistic solution before printing this rather hideous bodge.



TRY OUT THE CREEPY WAY...

★PRIZE £20★

CREEPSHOW

It never ceases to amaze me what people will do with a mode 13 screen. The afore mentioned **Dean Murphy** has sent in a little ditty called *Creepy*. It takes any mode 13 screen and makes the pixels creep randomly about the screen. You must have at least 160K screen memory configured first. A demo picture is generated by DEF PROCpicture. If you have some of your own, or indeed, someone else's, artwork, merely replace the PROCpicture by a *ScreenLoad.

Dean says if you have an Arm3, the A%=250 can be replaced by A%=1600. This is the number of dots that are 'creeped' per frame. For screens with areas of black, a different effect can be achieved by removing the \'s from the two lines before .pickd. This prevents black pixels from creeping and tends to merge areas of colours.



...TO ONSCREEN ANARCHY

One technical point about Dean's program; random numbers are generated by a macro call taking the number of bits to generate as a parameter, ensuring random numbers are produced in the shortest time.

★PRIZE £20★

HUBBLE BUBBLE

This program was written by **James Wilkinson** and it is in reply to our request for 'natural' programs. It uses multi-screen animation and allows you to generate bubbles for all occasions. Bubble size is controlled by the three mouse buttons; the middle giving constantly large bubbles, the left providing bubbles which gradually reduce in size and the right producing small bubbles which grow in front of your very eyes! Further variety can be yours by using keys 1-5 to set bubble type. 1 gives transparent bubbles. 2 provides solid white bubbles. 3 an opaque version of 1. 4 gives you solid white with a black border and 5 produces a dithered grey

Software bargains at the lowest prices!

Archimedes

	SRP	SALE
Arcade Games		
Break 147 & Superpool	24.95	22.45
Bubble Fair	19.95	15.95
Fine Racer	19.95	15.95
Iron Lord	19.95	15.95
Mad Professor Mariarti	20.39	15.95
MIG-29 Fulcrum	40.85	31.95
Provocator	19.95	17.95
Twinworld	19.95	15.95
Wonderland	35.75	29.75
"Mind" Games		
Chess 3D	19.95	19.95
Simulation Games		
Chocks Away Compendium	39.95	35.95
Saloon Cars	24.95	22.45
Checkered Flag	24.95	21.95
Sport Games		
Manchester Utd Europe	25.99	25.99
Microdrive	20.39	15.95
Jahangir Khan W. Ch. Squash	25.99	21.95
World Champ. Boxing Mgr	25.53	21.95
Compendiums		
Arcade 3 Compilation	15.50	12.95
Arcendium	15.28	12.95
Real McCoy	29.95	26.95
Real McCoy 2	29.95	26.95
Winter Box	20.39	15.95
Leisure/Various		
Arcticulate	24.95	22.45
Arctist	24.95	22.45
Rhapsody 2	61.95	51.95
Speech	19.95	15.95
Tracker	49.95	41.95
Trivial Pursuit	30.64	25.95
Turbo Type	24.94	21.95
Utilities		
ALPS System	35.71	29.95
Arclight	50.00	42.50
Artisan 2	61.95	51.95
CIS Utilities 1 & 2	17.32	14.75
Creator	45.77	39.95
Euclid	70.00	57.95
Graph Box 2	81.69	69.95
Investigator Rel 2	27.95	23.50
PC Emulator V1.6	116.33	116.33
Pro Artisan	105.00	81.95
Render Bender 2	135.00	114.95
Splice	30.00	25.50
Tracer	61.25	51.95
Tween	30.00	25.50
Word Processors		
Interword	34.07	28.95
Protext V5	152.75	129.95
Educational		
Bumper Disc 1	23.95	19.95
Bumper Disc 2	23.95	19.95
Children's Graphics Pack	19.95	17.95
Coffee (9-15yrs)	32.84	29.95
Converta-Key	19.95	17.95
DataWord	19.95	17.95
Decorated Alphabet Pack	19.95	17.95
Desktop Folio	105.75	89.95
Farmer Giles	20.39	17.35
Farmer Giles 2	20.39	17.35
First Words & Pictures	25.85	21.95
Flight Path	32.84	29.95
Freddy Teddy (3-7yrs)	23.44	19.95

	SRP	SALE
Freddy Teddy's Adventure	19.95	17.95
Fun School 2 0-6yrs	20.99	15.95
Fun School 2 6-8yrs	20.99	15.95
Fun School 2 8+yrs	20.99	15.95
Fun School 3 0-5yrs	24.99	21.95
Fun School 3 5-7yrs	24.99	21.95
Fun School 3 7+yrs	24.99	21.95
Giant Killer	20.39	18.35
Giant Killer Support Disc	17.88	15.95
History Costume Library	19.95	17.95
House of Numbers (6-13yrs)	25.85	21.95
Imagine	39.95	36.95
Let's Spell At Home	25.50	20.50
Let's Spell At the Shops	25.50	20.50
Let's Spell Out & About	25.50	20.50
Letters & Pictures (6-8yrs)	23.50	19.95
Maps & Landscapes (9-14yrs)	25.85	21.95
Money Matters	19.95	17.95
Nature Libary	19.95	17.95
Numbers/Pictures (4-6+yrs)	23.50	19.95
Numerator	77.55	77.55
Ollie Octopus Sketchpad	16.39	14.95
Pendown 2	63.45	63.45
Picture Book	19.95	17.95
Prehistoric Animals Pack	19.95	17.95
PrimeArt	93.94	79.95
Puncman 1&2 (7-13+)	23.50	19.95
Puncman 3&4 (8-14+)	23.50	19.95
Puncman 5, 6, & 7 (8-15+)	23.50	19.95
Revelation	89.30	89.30
Reversals	23.50	19.95
Search & Rescue (9-15yrs)	32.84	29.95
Spelling Week By Wk (6-14)	25.85	21.95
Spellbook (4-9yrs)	25.50	21.95
Target Maths	19.95	17.95
The Art Machine Pack 1 (9+)	35.19	31.95
The Art Machine Pack 2 (9+)	35.19	31.95
Things to do with Numbers	25.50	20.50
Things to do with Words	25.50	20.50
TinyLogo/Tiny Draw (4-9yrs)	35.19	31.95
Tools Graphics Library	29.95	27.95
Turtle's World Tour	19.99	15.95
World Geography Maps Pack	29.95	27.95
World Wildlife Pack	19.95	17.95
Worldscape	19.95	15.95
Communications		
ArcComm V2	63.45	63.45
Arcterm 7	79.95	67.95
Desktop Publishing		
Clip Art Set 1	35.19	29.95
Impression 2	198.57	145.95
Impression Junior	105.69	81.95
Ovation	116.33	91.95
Peripherals & hardware		
Arch Games Controller (RTFM)	41.11	36.95
Arch Joystick Interface (Serial P)	28.14	26.95
Clares Micro Mouse	32.00	27.50
Delta Cat Joystick	34.95	31.95
Graphics Enhancer	222.08	195.95
Hard Disc Companion	39.84	34.95
Scan-Light Junior 300/400	222.08	209.95
Scan-Light Junior A3000	233.83	209.95
Scan-Light Senior 300/400	468.83	445.95
Scan-Light Senior A3000	468.83	445.95
Computer Aided Design		
SolidCAD	149.95	134.95
SolidTOOLS	375.00	337.50
WorraCad	116.33	87.95

(SRP = Suggested Retail Price) All prices include VAT @ 17.5%

This is only a selection of our range of software for the Arch!
Please 'phone or write for our catalogue - **IT'S ABSOLUTELY FREE!**

Software Bargains & Mercury Games
Dept AUB1, C/O Northwood House, North Street, LEEDS LS7 2AA
TEL: 0532 436300 FAX: 0532 423289

This month's special offer for the Arch!





Corruption
~~£30.60~~ Sale £11.95

Fish!
~~£30.60~~ Sale £11.95

Buy both for only £19.95!

Arc New Releases!

	SRP	SALE
Lemmings	25.99	25.99
Chuck Rock	25.99	25.99
Poizone	19.95	15.95
Kerbang (Due Sept '91)	19.95	15.95
Top Banana	25.99	22.50
Zelanites The Onslaught	24.95	24.95
Fireball Xtra	14.95	11.95

Printers

Panasonic KX-P1081	9pin dot matrix	£159.95
Panasonic KX-P1180	9pin dot matrix	£169.95
Panasoinic 1124i	24pin dot matrix	£254.95
Seikosha SP2000	9pin dot matrix	£159.95
Seikosha SL92	24pin dot matrix	£249.95

Prices include VAT, cable & delivery!
(Delivery free UK mainland only, excluding Scottish Highlands)
** Full specifcations available on request **

BBC & ELE

Send for our Catalogue!	BBC/ELE	B-Disc	Cpct
A Question of Sport	8.95	10.95	-
Acornsoft Hits 1 or 2 (each)	1.95	8.95	10.50
Arcade Soccer	6.50	8.50	8.95
Castle Quest	5.95	7.95	-
Colossus 4 Chess (40t)	7.95	12.25	12.25
Colossus 4 Bridge(40t)	7.95	12.25	-
E-Type	6.50	9.75	10.50
Elite	9.75	11.25	15.95
Exile	9.75	11.25	15.95
Fun School 2 (0-6 yrs)	9.95	11.95	12.50
Fun School 2 (6-8 yrs)	9.95	11.95	12.50
Fun School 2 (8+ yrs)	9.95	11.95	12.50
Holed Out	8.50	9.75	10.50
Holed Out Extra Crses 1	6.50	7.75	8.50
Holed Out Extra Crses 2	6.50	7.75	8.50
Hostages	7.95	9.95	11.95
Master Break	7.95	9.95	11.95
Micro Power Magic 1 *	5.95	6.95	7.75
Micro Power Magic 2 *	5.95	6.95	7.75
Micro Power Magic 3 *		6.95	-
Mini Office 2 * (BBC only)	10.95	13.95	17.95
Mini Office 2 M128 *		15.95	-
Nevryon	-	9.75	10.50
Play it Again Sam 1 to 10 (Each)	6.95	8.95	10.50
Play it Again Sam 11 to 14 (Each)	7.95	9.95	11.95
Play it Again Sam 15	9.95	11.95	15.95
Repton infinity	9.95	11.95	15.95
Sim City	9.95	11.95	15.95
Speech (BBC only)	7.95	9.95	11.95
Superior Collection 1 (BBC only)	6.95	8.95	10.50
Superior Collection 2 (BBC only)	6.95	8.95	10.50
Superior Colection 3 (Ele only)	6.95	-	-
Tank Attack (40t)	9.95	11.95	-
U.I.M. (Needs 16k Sideways RAM)	-	12.95	14.25
White Magic 1 or 2 (each)	6.50	9.75	10.50

(* Please state 40t or 80t disc)

* Access/Visa Welcome
* Please add 95p P&P (Europe £2.50, Outside Europe £4.50)
* All prices include VAT @ 17.5%
* Goods despatched within 48 hrs, (subject to availability)
* Educational discount of 30% off SRP (not Sale price) available on most Archimedes software; Offical Order No. or school headed notepaper required - minimum order value £30.00 for invoicing, otherwise cheque with order.

(Prices are correct at the time of going to press, E&OE)

bubble complete with white edging. Once the bubbles have been selected they will follow the mouse pointer producing a seemingly infinite stream. So on a hot summer day you can load the program, then lie back and pretend that you're watching a Perrier advert.

★PRIZE £10★

CAN'T SEE THE WOOD

In the August issue we carried a program by Barry Wicket that drew trees. This feature inspired **Paul McKenzie** into action (again) and he sent us no less than three arboreal listings. The best of these, *Tree2*, earns him a tenner. It is a pretty standard recursive tree. However, it does plot thick branches (in 'brown' if you have a Master, an Archimedes or a Beeb with GXR) and it does perform a second pass and add a smattering of leaves. Although there is no randomness within the body of the program, the tree it draws has a very skeletal and non-uniform appearance to it.

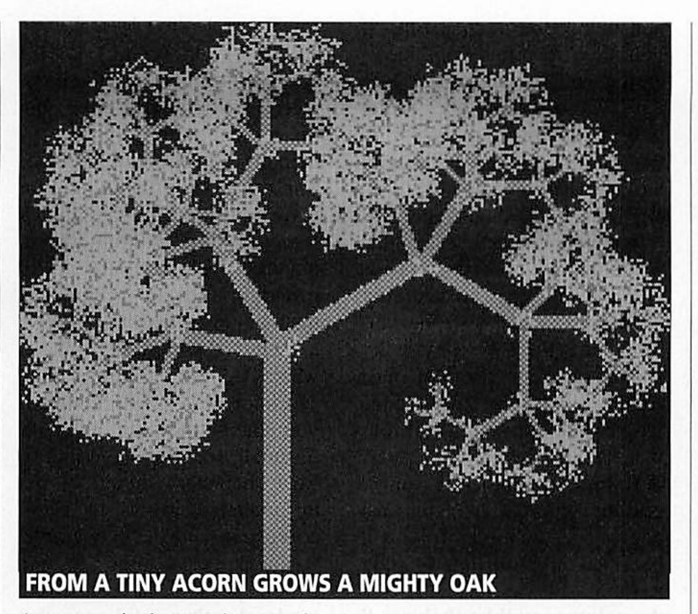
The number and nature of branches can be easily changed by altering the parameters in the three recursive calls to PROCt.

★PRIZE £10★

GETTING ROPED IN

Welcome, ladies and gentlemen, to that part of *Info known as One Line Corner. OLC may be small, but it is perfectly formed, and this month is no exception. We have two programming epics this month. The first was written by **Michael Fairbank**, is Archimedes only and entitled *Rope*. Unfortunately, either Michael forgot to supply his address or our cat has managed to hide it somewhere. So if the real Mr Fairbank can let us know his whereabouts, we can send him some cash!

Michael's program is yet another variation on the *String Thing*, but includes the effects of gravity. Arm3 owners may like to change the number of


FROM A TINY ACORN GROWS A MIGHTY OAK

'segments' that make up the rope from 10 to 20 contained in variable N. Apart from the rather bizarre first couple of seconds, it produces a strikingly realistic rope attached to the pointer – even better than those in *Jet Set Willy*...

★PRIZE £10★

UNKNOWN PLEASURES

Our second one-liner, *JDUP*, comes from *Info regular **Garry Quested**. It will work on all machines, but eight-bit users will have to type in each statement separately and join them all together with last month's ToOneLine listing. You'll also have to wait about half an hour for the program to run. Can anyone think of an easy way to speed it up?

Joy Division fans may see a resemblance between the program's output and the band's *Unknown Pleasures* LP.

If you want to fiddle with the program, the variable L controls the number of lines drawn across the screen and P sets the number of sinusoidal peaks on each line. The C, W and H arrays contain the centre, width and height of each of these peaks. Varying these will alter the apparent 'rockiness' of the final picture.

Perhaps we could start a sub-division of OLC devoted just to album covers! As always, £10 will go to the author of any good ones.

GREEN PROGRAMS

Many moons ago, a utility was published in *BAU* that allowed listings and the like to be printed out several columns to the page. Looking back, we thought the original could do with a new feature or two so we now present a new module called *ListAid* that should cater for most users' needs.

Often, particularly when writing in assembly language, listing your program out can waste a great deal of paper (more than a rainforest or two when you add up all the output of the *BAU* readership). Aside from any altruistic environmental reasons for listing in several columns there is also the practical side effect that your program will be easier to read when it isn't spread out in a long, thin dribble of ink over umpteen pages.

ListAid is a relocatable module that supports several * commands. Simply enter and run LASrc and the module ListAid will be saved in your current library. To use *ListAid* either load it by typing *ListAid or run a previously saved parameter file (more on this later). Once installed, you may used the *Listing command to print out your program.

The original multi-column lister assumed you wanted to print your listing out, but this excluded the possibility of loading the multi-column version into a text editor (like *Edit* or *Pipedream*). Since it is easy to redirect screen output to a file or a printer, *ListAid* simply prints the formatted text on the screen and leaves it up to you to decide where it goes! Risc OS permits the destination to be a file or the printer.

ListAid's default settings specify a three-column listing across an 80-character wide page. You can alter any of the parameters that determine the format of *ListAid*'s output – details are given later on. However, to see how *ListAid* is used, try out the default format with a listing of your own. The procedure is as follows:

● Turn your program into a text file. For Basic programs type:

```
LISTO 1 (or similar)
*Spool Temp
LIST
*Spool
```

to generate a text file called Temp, or use a utility like Philip Colmer's *BasTxt* to do the conversion.

● Optionally, type *Listing Temp to display the multi-column listing on the screen. Your screen mode may not be wide enough to accomodate the output – change it as necessary.

● Print out the file by simply using the Risc OS file redirection convention, by adding { > printer: } to the end of the command. Alternatively, send the output to a text file by adding { > TextFile } and load it into *Edit* or similar. Then print this out in the usual way.

Generally speaking, unless you want to use a fancy font or have sophisticated headers and footers, *ListAid* should provide enough facilities for listing directly to the printer, which is the idea – it is a programmer's tool and shouldn't necessitate undue switching to and from the desktop.

To alter the format of the *ListAid* output use the command *ListSet to fix the value of one or more parameters. To see the current values type *ListPars. Most of the parameters have numerical values although a couple are of the YES/NO type. Here is a summary of what they all mean.

● **Columns**: the number of text columns displayed. If you set just this, the current page

width is split equally between the number of columns you specify. The gap between columns is taken into account.

● **Width**: the width of the printed page. Typically, a standard dot matrix printer will be able to display 80 or so characters in a normal font and perhaps 110 or more using a condensed or smaller one. Obviously, wide body printers, like the Star LC-15 on which this module was tested, can support more columns – 120 or more in a normal font and maybe 230 or so condensed!

● **Length**: the number of lines of listing actually printed per sheet. Add this to the various margins (see below) to find the true paper size.

● **ColumnsSize**: the width of a printed column. If this is specified rather than Width then the page width is calculated accordingly. Generally you'll specify one or the other.

● **TopMargin, HeaderMargin, FooterMargin and BottomMargin**: the vertical margins that surround the header and footer lines above and below the main listing. If you have specified page ejects at the end of each page (see Eject below) then the footer margin is a bit redundant.

● **Gutter**: the gap in characters between columns.

● **Eject**: this should be followed with Y or N rather than a number. If it is Y then a page eject (Ascii 12) is printed after each page. Otherwise the bottom margin is physically printed. In this case you must ensure that the total page length (Length plus the four margins) is correct.

● **Balance**: another Y or N option. When it is N the last page, if not entirely full, will be filled up from left to right in the usual way. When it is Y the columns will be 'balanced' so they are of even length, as far as this is possible.

● **LeftMargin**: the number of spaces printed to the left of each output line. (Normally this should be zero and you should arrange the paper in the printer correctly!)

So, a typical *ListSet command might look like this: *ListSet -width 120 -columns 2 -gutter 4 -eject Y. On typing *ListPars, you will see not only the parameters described above but three other strings (empty by default) – Setup, Header and Footer. These can be set in similar ways using the *ListSetup, *ListHeader and *ListFooter commands. The setup string will generally contain characters that should be sent to a printer to select the correct font, or whatever, for printing. You can include control codes if you like – they are given as decimal (or hex) numbers. Real characters should be put in quotation marks to avoid confusion. For example, *ListSetup 15 is used to put Epson printers in condensed mode. Another valid sequence might be: *ListSetup 64 27 "E".

Check your own printer manual to find out what font styles and size are available and experiment to find the right balance between number of columns and readability.

There are two other user-definable strings, like the setup string – the header and footer. These are displayed centrally at the top and bottom of each page respectively. Special codes may be introduced into these strings:

%0 current page number
%1 current time
%2 current date

So typical definitions might be:

```
*ListHeader "Page:
%0"
*ListFooter "MyProg
/
%1 / %2"
```

Finally, you may save the current parameters, headers and footers as a file using the *ListSave command. This creates an Obey file which may be run without *ListAid* being loaded. The first command in the file is a *RMEnsure which attempts to load the *ListAid* module (it will normally be found in the library). Then follows a series of commands which define the parameters in the usual way. If you like, try editing a saved file in *Edit*.

ListAid is a relocatable module and so its structure is similar to many other modules.

At the start is a set of offsets to key areas of code. Routine .init is called when the module is loaded or reinitialised and this routine claims memory from the RMA in which to store the parameters, header and footer strings and as workspace. Routine .quit releases this memory when the module is killed. The only other important offset is la_commands which is a table of *commands supported.

For simplicity a macro is used to define each command in the null-terminated list. FNcommand takes the command name and the minimum and maximum number of parameters allowed for it. It is assumed that for each command three labels will exist. For example, for *Listing there is .Listing which is the routine itself, .Listing_Help which is the help string and .Listing_Syntax which is a syntax string (should you provide the wrong number of parameters for example). A point of interest is that a 'token' is used for Syntax: *keyword – a feature of Risc OS that saves on memory.

The *ListSet command uses the wonderful OS_ReadArgs call we described in August. It simply looks for known parameters (supplied in a string) and extracts the individual values you supply. Any value you give is checked against the minimum and maximum allowable figures for that parameter (held in .minima and .maxima) and an error returned if it falls outside these. For simplicity, 254 is defined as FALSE and 255 as TRUE. In this way, Yes/No type parameters (like -Balance) can be dealt with as well as numeric ones.

The actual printing process is quite simple. Characters are fetched one at a time from the given file and sent to .write_char. This stores them in a large buffer for .show_page to print out when the page is ready. The page is treated as a long thin sheet one column wide. So, a four-column 60-line page is actually stored as 240 lines in memory. Once a page is full, or there is no more to display, each real line is output by printing the left margin and then fetching each column and printing it separated by the correct gutter.

Which columns are fetched may depend on whether the Balance option is used – a (slow but simple) divide routine calculates where to split text. The special codes %0 to %2 that may be included in headers and footers are decoded with another handy SWI call. The page number, time and date are converted into strings are passed to OS_SubstituteArgs so it can swap the % codes for the real thing.

You may like to add enhancements to *ListAid*. First, build up a library of useful parameter sets. A nice small listing font can be produced on my Epson LQ500 printer with: *ListSetup 27 "g" 27 "A" 6.

Next, you might like to alter the header time and date formats. These are stored in the string at .time_format. If you want to add new codes (%3 onwards), the appropriate code to supply the strings to be substituted should be added to the .head_foot routine.

*QUIT

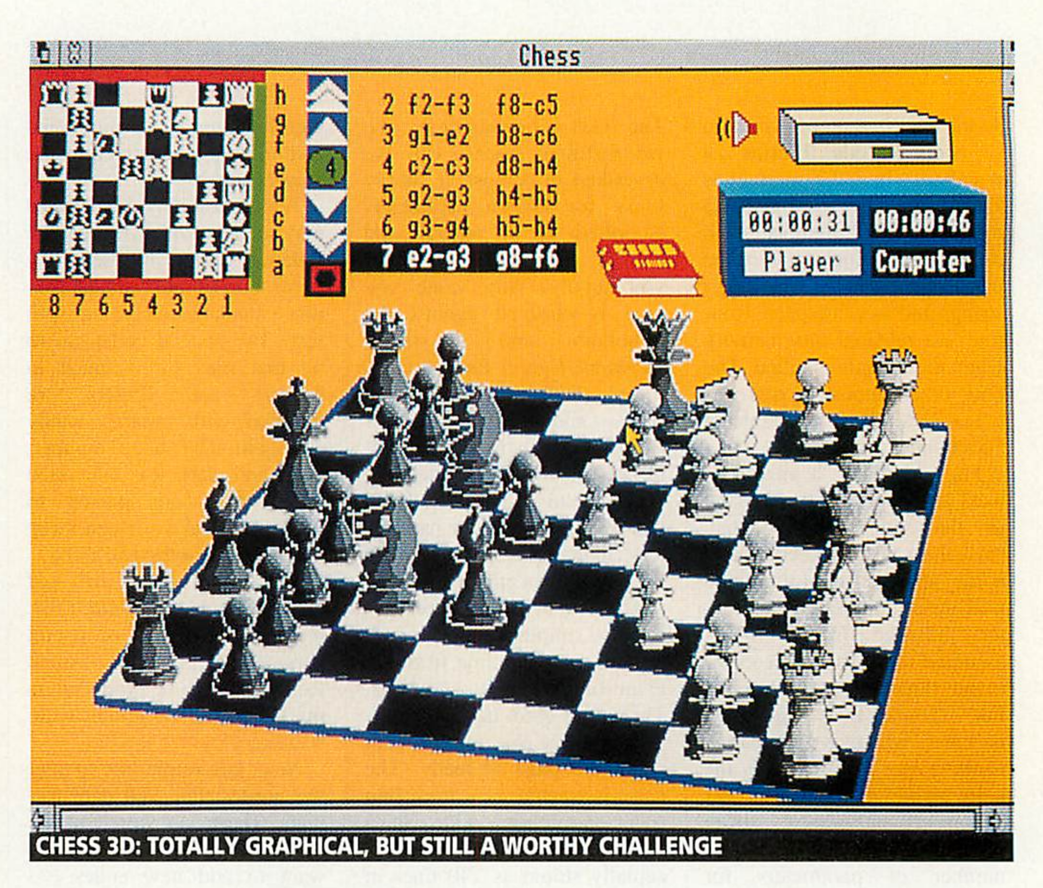
As usual, it's over to you again. If you've written any programs or routines, small or large, you feel may be of interest to others, do send it in. A brief description of your program and a stamped addressed envelope will ensure you get a speedy reply.

Next month, a rather wacky wavy line from Jan Vlietinck, a speedy sprite rotator from Barry Wicket and, well, maybe something from you!

David Lawrence
Dave Acton

SUBMISSIONS

Please send your submissions to us at: *Info, BBC Acorn User, Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ. All but the shortest of programs should be on disc and accompanied by a brief description of their purpose and operation. A stamped addressed envelope with your submission will ensure the return of your disc.



CHESS 3D: TOTALLY GRAPHICAL, BUT STILL A WORTHY CHALLENGE

Games are often seen as a diversion from the serious task of education. **CHRIS DRAGE** says that there is often a hard core of learning inside the soft shell

GAMES CHILDREN PLAY

The computer is a powerful vehicle, forming an integral part of a child's range of learning experiences. Used in conjunction with other media a great deal of thinking and discussion is encouraged. The exchange of ideas often results in children learning from each other and not just from the adults in their lives.

The end product may or may not be the game itself; the key educational element in games is problem solving. Children in play are in fact practising problem-solving strategies in a 'fun' situation. Such computer activity offers children the opportunity to work in many areas so important for today's youngsters and to which more time must be given.

SIMULATING IT

Dressing up problem-solving in a simulation or an adventure format has always been a very popular computer-based activity. A successful simulation causes the user to say 'I see what happens' or 'I know how we can deal with this situation' in response to the program demanding your reaction or involvement. In a computer simulation, a child may be required to take decisions of life or death, fight or flight that they will not usually encounter in everyday life.

Computer-based adventure programs can also generate a creative and imaginary world in the classroom. Experimentation with ideas, discussion, formulation and sharing of strategies, drama and simulation all feature largely in adventure programs. Traditional drills-and-skills have no place in the micro-world generated by the computer. The emphasis is on children actively participating in an exciting and stimulating environment.

Among my choice of simulation games, flight simulators take first place, perhaps due to the fact that I desperately wanted to train for a pilot's licence in my youth. Flight simulators on the Archimedes are very good indeed. *Chocks Away* with its extra mission supplement has to be the *pièce de resistance* with its multiple viewpoints and the optional serial link by which two 'pilots' can share the missions – creating a situation which really demands co-operation and shared strategies.

A tip here – if you can afford it, a joystick interface is a must for this game as it permits dual joystick control for both players and helps to preserve the keyboard. The interface and Risc OS-compliant software allow joysticks to be

used on many of the games mentioned here. Of the two other flight simulators *Interdictor 2* and *MiG-29* both represent modern fighter aircraft. Undoubtedly, the latter is the better of the two with its multiple camera viewpoints, its variety and realism. It is highly enjoyable and thoroughly recommended.

For motor racing enthusiasts *Saloon Cars*, a driving simulation, will not disappoint. Working your way up from training on and racing with an Astra GTE at Brands Hatch, the program employs excellent animation, graphic and sound capabilities, reproducing quite accurately the forces acting on a vehicle at speed with the added bonus of being able to fine tune the vehicle. Without doubt *Saloon Cars* is the most realistic driving simulation to date.

Golf, with its estimation of distances, speed and strength of swing and variables like wind speed and so on is a sport which lends itself to simulation. Unfortunately, all Archimedes' golf simulations assume women play no part in the sport! Of the three totally male-dominated simulations, my vote goes to *Superior Golf*, its construction set and *Microdrive*. The former program lacks the realism of the latter but makes up for it by allowing you to design individual holes or complete courses.

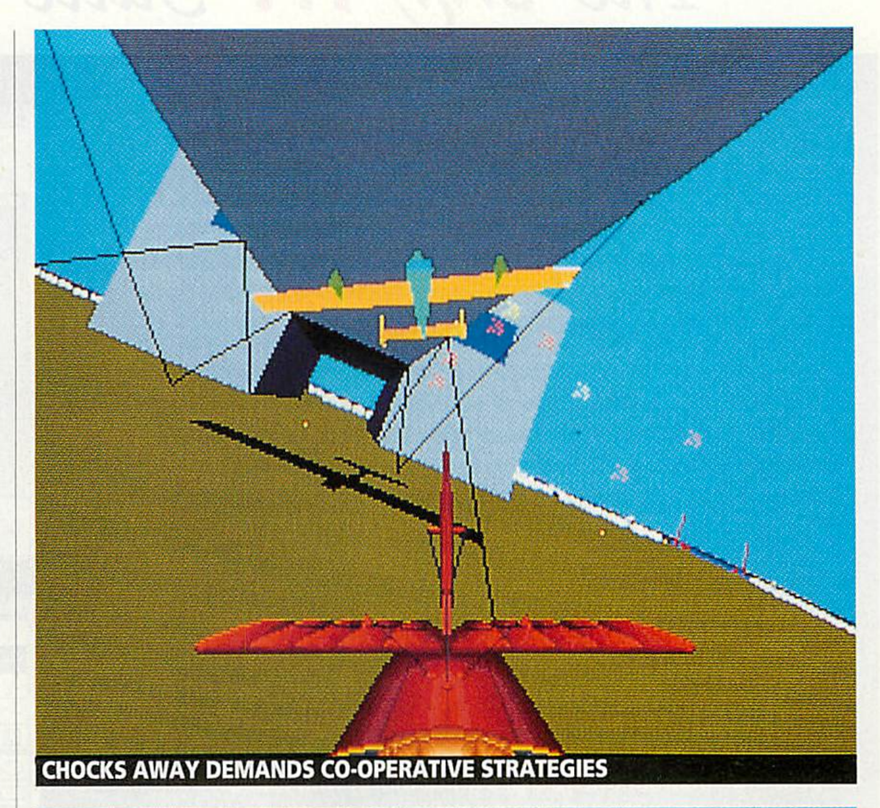
This feature is so accurate that one reader, an enthusiastic golfer at Morecambe GC, has recreated the course on screen to find that it plays just like the real thing! The program has actually helped in testing out proposed alterations to the Morecambe course. As a golfer myself, I must confess I like the 3D graphics, the realistic swing control and the behaviour of the ball in *Microdrive*, a program that lacks only two things: a variety of courses and *Superior Golf*'s design element. Both programs are highly recommended.

Other sporting simulations worthy of a look are 4D's *The Olympics* (very topical every four years or so), *Break 147* (a pool simulator that's great for angles, trajectories and so on) and Krysalis' *Manchester United* (managing a football team for a season).

STRATEGY GAMES

With computer strategy games children quickly discover the value of keeping records of their strategies and moves on paper when tackling the tasks. Games like chess and Othello (Reversi) and so on offer children one particular advantage: as the opponent is a very patient non-human, a group of children can quite happily challenge it. It is because these games promote group problem-solving situations that the computer versions are so useful.

Examples of computerised board games abound; perhaps none more so than chess. *Chess*, by David Pilling, is a must for anyone interested in a full-featured computer version of the game. Costing only £5.99, this represents excellent value for money. With about the same playing ability but with a totally graphical approach, Micropower's *Chess 3D* permits the board to be rotated and seen from any one of four angles. A corresponding 2D view is always available – useful for beginners. Young club players of high ability will find either of these programs worthy challenges.



CHOCKS AWAY DEMANDS CO-OPERATIVE STRATEGIES



GOLF SIMULATIONS INVOLVE COPING WITH MANY VARIABLES

Another board game of note is *Trivial Pursuit*, an on-screen version of the real thing in which six players can compete. The problem of getting six hands on the mouse is neatly overcome by the addition of a *Voltmace Deltacat* joystick, a mouse substitute, which can be handed directly from one player to another. Another interesting blend of quiz game and strategy is employed by *Master Break*, an all-action, snooker-based, general knowledge quiz whose only serious shortcoming is its inability to include children's own datafiles of questions.

Repton 3 is an on-screen strategy program which children from seven years upwards simply adore. The traditional *Repton* graphics are

now upgraded and much better than in any previous incarnation. No library of games software is complete without *Repton 3* – it is a must.

Another of my favourites is *Square Route*, an uncomplicated block-fitting game not unlike *Tetris*, which is simple to play but very difficult to master. The game is based on a grid onto which you must place a certain number of differently shaped pieces within a time limit. It sounds quite easy, but...

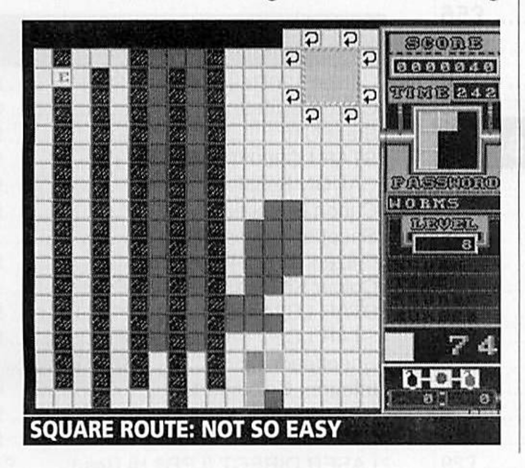
Remember, if your budget is too tight to permit any of the above games, there are some good yet cheap strategy games in the public domain. It is worth sending for a demo disc and catalogue from some of the PD dealers advertising at the back of this mag.

In my opinion there are two Archimedes adventures which outshine all previous BBC B or Archimedes programs of this type. The first, *The Wimp Game*, is a real brain-teaser for older children (and adults). It is a pointer-based adventure in which no text is used and objects and their behaviour must be investigated by simply pointing and clicking on them. One rather slick difference is that you can 'pick up' a magnifying glass to observe objects more closely. There is no time limit, no help nor any numeric score in this program, you simply advance from being the owner of a humble Acorn Atom, to finally getting your hands on an R200 Unix workstation.

The second adventure program, *Wonderland*, will be difficult for other publishers to eclipse. Even the central character is a girl, Alice, and that is unique in itself. Based on the Reverend Dodgson's children's classic, this huge adventure – it is contained on four discs – is not for young children.

Wonderland uses its own Wimp system (not unlike a Mac's), which possesses some excellent features, like presenting only those verbs pertinent to the particular object encountered and an ability to map the adventure on to the screen as you go along – no more scribbling on scraps of paper. Once the map contains several locations you can click on their icons in order to move your viewpoint there.

A graphics screen can be called up from almost any location, some of which contain the most delightful animations imaginable. The scene depicting a piano play by itself and a nearby chair dancing in unison had my seven year old in stitches. Unfortunately, there is no sound available in the game. However, being



SQUARE ROUTE: NOT SO EASY



SALOON CARS: REALISTIC DRIVING SIMULATION

able to drag objects about and place them in windows more than compensates as it keeps the typing down to a minimum. I consider this adventure an absolute must.

DESIGNING YOUR OWN

Why purchase a game when you can design and make one yourself? Ideally, with children this could be done with Logo but there are other means available. *Creator: Arcade Games Designer* is an unfortunate title, as this program enables a number of different games (or animated sequences) to be created from scratch with little or no programming knowledge. It then permits these to be run independently of the creator program itself. Like all design scenarios, it is the planning before execution which is the key to success and is certainly the key educational element in this program.

With little or no typing, each component is built up in turn and can have different levels added (represented by different sprites) and sound effects and music. This is a very versatile little program which contains a number of good features (for example, gravitational effects, and stereo positioning of sounds) and it is worth sending for the demonstration disc in order to get a flavour of how it all works. Look out also for Adventure Language Programming System (ALPS), for writing text and graphics adventures, from the same stable.

The role of play in computer software is vital in helping to ensure that children will be making decisions and solving problems as well as discovering and practising fundamental thinking skills. The more that these thinking skills are practised in many different simulated situations, the more likely it is that they will be remembered and consciously used in real life. This is perhaps the most significant contribution to children's education that playing computer games can make.

PRODUCT DETAILS

- **Chocks Away, Saloon Cars:** £24.95 each from Fourth Dimension Ltd, 1 Percy Street, Sheffield S3 8AU
- **Extra Missions, The Wimp Game:** £19.95 each from Fourth Dimension
- **Compendium:** £39.95 from Fourth Dimension
- **MiG-29 Fulcrums:** £40.85 from Domark Software Ltd, 51-57 Lacy Road, Putney, London SW15 1PR
- **Trivial Pursuit:** £29.95 from Domark Software
- **Joystick interface:** £23.95 from The Serial Port, Burcott Manor, Wells, Somerset BA5 1NH
- **Square Route:** £38.95 from Computer Eyes, 16 Starnes Court, Union Street, Maidstone, Kent ME14 1EB
- **Chess:** £5.99 from David Pilling Software, P.O. Box 22, Thornton Cleveleys, Blackpool FY5 1LR
- **Chess 3D:** £19.95 from Micropower, Northwood House, North Street, Leeds LS7 2AA
- **Superior Golf & Construction Set, Master Break, Repton 3:** £19.95 each from Superior Software, P.O. Box 6, Brigg, South Humberside DN20 9NH
- **Wonderland:** £34.95 from Virgin Mastertronic Ltd, 16 Portland Road, London W11 4LA
- **Creator, ALPS:** £38.95 from Alpine Software, PO Box 25, Portadown, Craigavon BT63 5UT



Midnight Graphics Products

Clip Art - Draw Files

Give your DTP documents the right balance with Midnight Graphics Clip Art.

Over 480 Draw file images, presented in a library of five discs.

Change the images in !Draw to suit your style and purpose.

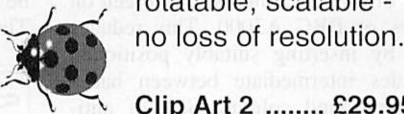
Then place them into Impression or Acorn DTP.

Clip Art . £29.95

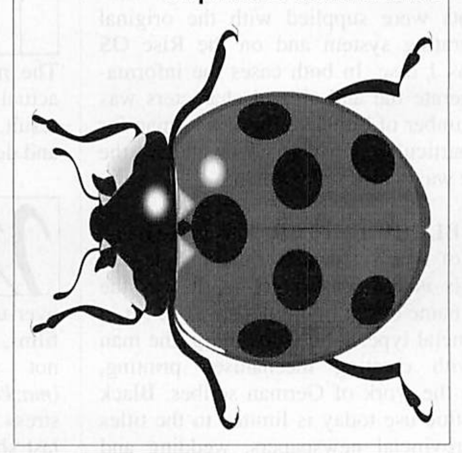
Clip Art - Set 2

Clip Art Set 2 - Now Available

Draw file Clip Art - Completely rotatable, scalable - no loss of resolution.



Clip Art 2 .... £29.95



Full Range of Educational & Special Needs Software Available



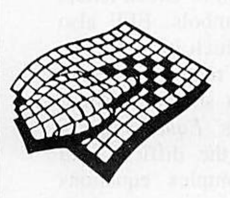
4Mation, Chalksoft, Longman, Sherston, Widgit
And many more ...

Books (No Vat)

C: A Dabhand Guide	£14.95
Archimedes Assembly Language	£14.95
Archimedes Operating System	£14.95
The above books have accompanying discs add £5 for 5.25" £7 for 3.5"	
A3000 Technical Guide	£29.95
A540 Technical Guide	£65.00
Acorn DTP Advanced U.G.	£14.95
Archimedes First Steps	£9.95
BASIC V: A Dabhand Guide	£9.95
BBC Basic Guide (Acorn)	£19.95
DTP Seeds (4Mation)	£8.45
128 Ref. Man.Pts 1&2 (ea.)	£14.95
New Advanced User Guide	£19.95
RISCOS PRM's	£79.00
Additional Arc Software Manuals (Acornsoft)	
First Word Plus, DTP, Assembler . (ea.)	£10
ANSI C Version 3	£19

Printer Drivers

Midnight Graphics	
Citizen Swift 9 Sprite Dump	£26.04
Citizen Swift 24 Sprite Dump	£26.04
Epson 24 Sprite Dump	£26.04
HP Paintjet Sprite Dump	£26.04
Integrex 132 Sprite Dump	£26.04
Integrex Colourcel Sprite Dump	£26.04
Juki 5520 Sprite Dump	£26.04
Star LC10 Sprite Dump	£26.04
Star XB24 Sprite Dump	£26.04
Star LC200 Sprite Dump	£26.04
Star LC24-200 Sprite Dump	£26.04
Ace Computing	
Printer JX	£13.00
Printer PJ	£13.00
Printer CA	£13.00
Electronic Font Foundry	
BubbleJet - BJ10e/130e	£10.00



- *Acorn Qualified Dealer*
- *Acorn Component Level Service Centre*
- *Specialists in Education*
- *Friendly Professional Service*



Software

ANSI C V.3 Compiler + free C Guide	£130.00
Apocolypse (3D Space Game)	£14.00
Arc DFS (DFS Filing System)	£22.00
ArcTerm (Serial Port)	£59.00
ARCTICULATE (4th Dimension SPEECH)	£14.00
ARCTIST (256 Colour Paint Package 4th Dim.)	£14.00
Artisan 2 (16 Colours)	£45.00
Atelier (Minerva 256 Colours)	£75.00
BOOGIE BUGGY	£17.00
CHESS 3D	£14.00
CHOCKS AWAY 2 (Flight Simulator)	£15.00
CHOCKS AWAY EXTRA MISSIONS	£14.00
CHOCKS AWAY 2 + EXTRA MISSIONS	£27.00
DESKTOP C V.4 Compiler (Acorn)	£199.00
Desktop Office (Minerva Integrated Package)	£95.00
DROP SHIP (Superb Graphics)	£13.00
EASIWRITER (Word Processor)	£135.00
Euclid 2 (3D Drawing)	£50.00
E-Type (Driving Simulation) / Designer each	£13.00
Equazor (Equasion generating package)	£39.00
First Word Plus V2 (Acorn)	£65.00
FONT FX (Font Effects for Draw/Impression)	£8.65
Flexifile Relational Database (Minerva)	£110.00
GRAPHBOX with Hotlink to PDream 3	£60.00
Holed Out, Extra Courses, Designer each	£13.00
HOSTAGES (Superior)	£14.00
IMPRESSION 2 (Document Processor)	£125.00
IMPRESSION JUNIOR (Easy DTP)	£70.00
IMPRESSION BUSINESS SUPPLIMENT	£45.00
Inertia (4th Dimension)	£13.00
INTERDICTOR 2 (Flight Simulator)	£25.00
Investigator (The Best Disc Copier)	£22.00
IRON LORD	£14.00
MINI HYPERPACKS (3 games p p) No's 1 to 4	£15.00
Maddingly Hall (Minerva Adv.)	£13.00
MAD PROFESSOR MARIARTY (Platform game)	£14.00
Magnetic Scrolls (Adventures)	£22.00
Manchester United	£19.00
Microstudio (Emr - Learn Music)	£79.00
MIG 29 (Flight Simulator)	£28.00
MULTIFS (Arxe Systems - Atari, PC, DFS)	£27.00
Multistore Database (Minerva)	£195.00
NEVRYON (Unbelievable Graphics & Gameplay)	£14.00
PC Emulator V1.60 + free Shareware	£99.00
Pipedream 3 (WP)	£115.00
Pipe Mania (Addiction beyond belief)	£16.00
POSTER (Superb effects)	£75.00
POWERBAND (3D Formula 1 Racing - 4th Dim.)	£16.00
ProArtisan (256 Colours)	£70.00
REAL MCCOY 1 or 2 (4 Game Compendium)	£20.00
RENDER BENDER 2 (Clares)	£99.00
RHAPSODY 2 (Clares Music package)	£45.00
SALOON CARS (Driving Simulation)	£18.00
SCHEMA (Multitasking Spread Sheet)	£90.00
Superior Golf	£12.00
SUPERIOR SPEECH	£14.00
STUDIO 24 PLUS (EMR New Risc Os Version)	£149.00
The Wimp Game (Desktop Adventure 4th Dim.)	£14.00
Tracker (Make Great Music)	£37.00
Twin World	£14.00
WONDERLAND (The Ultimate Adventure)	£24.00
WorraCad (Oak 2D Draughting Package)	£75.00
Worra Plot (Draw/HPGL Plotter Driver)	£25.00

How to find us



Hours of Opening
Monday - Friday 9.00 a.m. - 5.00 p.m.
Saturday 10.00 a.m. - 5.00 p.m.

NO Minimum Order Value
NO Carriage Charges in Mainland UK

ALL Goods Despatched within 24 Hours
Subject To Stock Levels

TEL: 061 766 8423






THE A TO Z OF FONTS

ANTI-ALIASING Aliasing means the 'stepping' of a straight line when shown on a computer screen. Anti-aliasing is done by the software algorithm used for displaying fonts on the screen on an Archimedes or BBC A3000. This reduces jagged edges by inserting suitably positioned pixels in shades intermediate between background and foreground colours. Sets of anti-aliased fonts were supplied with the original Arthur operating system and on the Risc OS Applications 1 disc. In both cases the information to generate the anti-aliased characters was held in a number of bitmaps. But if a bitmap for a font of particular size was not available, the nearest size was scaled up or down.

BLACK LETTER This is the name of type set in a Germanic style and is is also called gothic. It was the name of the first typeface to be set in moveable metal type. John Guttenburg, the man credited with creating mechanised printing, based it on the work of German scribes. Black letter or gothic use today is limited to the titles of some provincial newspapers, wedding and funeral announcements, some legal documents and signs in ye olde English tea shoppes.

CHARACTER SET All fonts with the exception of symbol fonts contain letters, numbers, some symbols and punctuation. There are different character sets for Latin and Greek. For Arc/A3000 users, The Electronic Font Foundry offers the only exceptions to the standard Latin 1 Character Set, including Cyrillic and Greek.

DECORATIVE Any style that cannot be easily be categorised is usually defined as decorative. It is the name used to cover unusual typefaces. 4Mation's *Poster* contains a good collection with letters made from twigs and type suitable for horror messages. This collection also includes a range of chunky, streaked and tube type. Decorative fonts also include artistic faces like Art Nouveau and Broadway.

EM and EN Standard measurements, usually used for spaces. Originally the notional size of a capital M, an em has come to mean 12 points and is irrespective of typeface or size. An en is half an em – six points.

FOUNT, FONT or FACES There is much confusion over these. Fount (UK) and Font (USA) – we mostly plump for the US spelling – means the printing of the total characters in a complete typeface, capitals, lower case, figures and punctuation, of a specified size and style. So 12pt Times Bold is a font name. Face is independent of size and style, so the face is Times. Having said that, today the two terms have become almost synonymous, taking either meaning.

There are hundreds of fonts, many available to Archimedes users. Some of the common ones are Avant Garde, Bookman, Courier, Garamond, Helvetica, Palatino, Poster, Times and Tiffany.

GARAMOND A well-known and very readable serif typeface, popularised by *The Guardian* (it is used, italicised, in the title). *BAU* used to be printed in Garamond, but it now comes out in Times (Trinity to Arc users).

HINTING is a method that the *Outline Font Manager* on the Arc uses to make the appearance of fonts better than they would normally be. The manager picks an alternative pixel to the actual one selected to give a more pleasing end result. Hinting is particularly relevant to serif and decorative faces.

ITALIC Any letter or face that slopes to the right is said to be italic, except for those inconvenient sans serif fonts said to be oblique. Often over-used, italics denote titles such as those of films, plays, books and so on, foreign phrases not completely assimilated into English, (*mazkirovka* takes italics, glasnost doesn't) stress or emphasis, particularly in speech. The last should be discouraged and almost all other uses in copy are spurious.

JOINED-UP Well, really the entry is Cursive, but C was already used up, so... Cursive describes a range of types that copies the 'joined-up' style of handwriting. The range is wide, from elegantly formal copperplate to those letters that resemble graffiti or felt-tip letters scribbled in haste. Chance is a excellent medium italic script based on Zapf Chancery, while FineScript is pure copperplate.

KERNING Some letters fit well against each other and some fit poorly. Especially in large text sizes, a W followed by an A can look ungainly. The reduction of spacing between specific letter pairs is known as kerning. Better DTP systems use fonts with built-in tables specifying the space between special pairs of letters, others just offer manual kerning which means inserting kerning codes between letters.

LEADING is the term used to describe the vertical spacing between the lines of text. The term arises from the strips of lead used to separate the horizontal strips of type in original hot metal printing.

MATHEMATICAL SYMBOLS Although most fonts contain basic mathematical symbols, this is not sufficient for some people's needs. Both Computer Concepts and EFF publish a MathGreek font with a selection of Greek letters and various mathematical symbols. EFF also publishes a MathLogic font which just contains logic symbols. Anyone who really wishes to include equations in their text should consider the use of Computer Concepts' *Equasor* package, which makes much of the difficult and tedious work of creating complex equations completely automatic.

Typefaces and fonts can be a minefield of related jargon. **DAVE FUTCHER** throws some light on the subject with a jargon busting alphabet

NEWSPAPER The daily newspaper business has long been instrumental in the design and use of fonts. *The Times*, when it changed fonts in the 1920s, gave its name to what is possibly the most well-known serif font in the world – the words you are reading are in 9-point Times. Latterly, *The Guardian* was both celebrated and criticised for its daring mix of an italicised serif font, Garamond, with an emboldened sans serif font, Helvetica, in its title. Mixing unlikely faces now has 'official' validation.

OUTLINING This is now the standard for Acorn fonts. It is recognised as the most advanced system for holding font information. Outline fonts are created mathematically, each typeface being composed of a series of numbers which mathematically describe the construction of the font. Being generated in this way, the font is resolution-independent. To use outline fonts on an Archimedes you must have Acorn's *Outline Font Manager* but if you purchased a DTP package you will already have it.

POINT SIZE The point size is often described as the distance between the ascent line and the descent line – the distance between the top of an 'h' and the bottom of a 'y'. The point size was originally the distance between the rows of leading (qv) in the days of mechanical type. In DTP it is the height of an imaginary bounding box around all the characters in a font.

QUOIN Pronounced 'koyn', this term dates from the old hot metal type days, before the advent of DTP, and refers to a wedge, hammered in with a yammerluff, used to lock the type in place in its tray.

ROMAN is another word for the older serif typefaces, in which the letters are made up of thick and thin strokes. The first Roman typefaces were similar in form to the inscriptions on the Trajan column in Rome, which dates from 114 AD. Modern Roman faces first appeared in Venice in the late 1400s and are based on the handwriting of Italian scribes.

Over the centuries serif style has moved away from a style similar to handwriting, with slanted serifs, to a style closer to engraving, with vertical serifs. Even today, Roman is often referred to as old face or old style and is best exemplified by the type called Garamond. Modern serif typefaces start with Times, and move on to such modern variants as Palatino (designed by Zapf).

SERIFS The 'twiddly' bits you can see on the letters of roman fonts. A sans serif face has no serifs. These faces made their appearance in Victorian times, when they seemed symbolic of the machine age with their suggestion of force. Sans serif letters are usually of the same thickness throughout. Their use is usually restricted to display types – that is for headlines in a magazine or on a poster – as they can be tiring to read when used for long articles or books. The most well-known sans serif font has to be Helvetica – Homerton on the Archimedes.

Slab serif type is made up of much thicker strokes than roman or serif type. The serifs are thick and square rather than curved (see the headline for this article). Such fonts, which were popular in the late 19th century, were also known as Egyptian or Mechanistic. They are close in feeling to sans serif typefaces.

TYPEFACE Type can be divided into various groupings. In each group there are different typefaces. Those used in printing can be divided into roughly six kinds, although the British Standards Institute defines more, with nearly a dozen different groupings.

The four main divisions are – Black letter or Gothic, Roman or Serif, Slab Serif, and San Serif. There are two other divisions of lesser importance – Cursive and Decorative.

ULTRA An exaggerated heavy weight of a particular typeface. Two common Archimedes outline fonts with this weight are Europe and Warsaw. Ultra works best in display lettering and banner headlines.



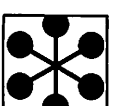
VERSAL An ornamented letter at the start of a chapter or section. One of the oldest terms in use, it predates moveable type and originates from the medieval monastic world of illuminated manuscripts and quill pens.

WEIGHT Each typeface has one or more members differing in weight. Electronic Font Foundry, the largest Archimedes font supplier, recognises nine: extra light, light, book, medium, demibold, bold, extra-bold, ultra-bold and black.

Most of the DTP packages for the Archimedes recognise only three weights – light, normal and bold – so EFF splits fonts with larger families into two, to simplify their installation and use. French, for example, consists of French light, French medium and French bold, while French2 contains French book and French demi-bold.

X-HEIGHT This is the generalised height of lower-case letters in a font. The height of the letter 'x' is usually typical of this height, therefore the term x-height is used. This should not be confused with point size.

YAMMER An old term that has found its way into DTP – a yammerluff was a leather-covered mallet used to hammer home a quoin. Hence text that is badly leaded or kerned is said to be 'yammered'.



ZAPF Herman Zapf is a modern font designer who has given his name to several typefaces, such as Zapf Chancery. Zapf Dingbats is a collection of blobs and symbols that has many uses. It is called Selwyn on the Archimedes.

ILLUSTRATIONS BY TONY JUDGE

Orion Computers Ltd.

Qualified Acorn Dealer ☆ Component Level Service Centre *Econet Service & Installation Centre ☆ Citizen Premier Dealer*

PLEASE REMEMBER WHEN COMPARING PRICES - WE DO NOT CHARGE CARRIAGE

on standard delivery within the UK. Next Day Courier Service £6.00 Carriage on Export Orders charged at cost.

Ordering Information

By Post

Please send your orders including a signed cheque, postal order or credit card number & expiry date (NOT CASH) to:

Department BAU11
Orion Computers Limited
Units 18e & 18f Boxer Place
Moss Side Employment Centre
Leyland, Preston, PR5 3QL

All cheques and bankers drafts to be made payable to **Orion Computers Limited**



VISA

By Telephone

Telephone orders may be place between 9:00am and 5:00pm
Please have your credit card number and expiry date ready

Tel: (0772) 623000 Fax: (0772) 622917



In Person

Callers most welcome. We are situated 3 miles from M6 J28. on the Moss Side Employment Centre (Please see October '91 Issue for directions from the motorway)



All offers subject to availability. Government & Educational Orders Welcome. **Minimum Order Value £10.00. Minimum Educational Order Value £15.00. Please note. VAT is quoted at 17.5%**

Acorn Computers

Special Offer when purchased with computer!!

A3000 -	£35.00 discount off other goods bought with computer, plus either 2Mb Upgrade F.O.C., 4Mb for £100.00
A410/1 -	40Mb IDE HD + Upgraded to 2Mb F.O.C.
A420/1 -	100Mb IDE HD + Upgraded to 4Mb F.O.C.
A440/1 -	ARM 3 F.O.C.
A540 -	4Mb RAM Upgrade F.O.C.

Description	*Ex. VAT*	*Inc. VAT*
BBC Master 128K	399.00	468.83
BBC A3000	599.00	703.83
BBC A3000 Special Access	699.00	821.33
BBC A3000 Learning Curve	699.00	821.33
Archimedes 410/1	1099.00	1291.33
Archimedes 420/1 Learning Curve	1299.00	1526.33
Archimedes 440/1	1699.00	1996.33
Archimedes 540	2995.00	3519.13

Prices subject to change - call for latest prices

We operate the Acorn Education Scheme.

We can supply A3000's on the Acorn 0% Finance Scheme.

Finance available over twelve months.	Deposit	Monthly
A3000 Learning Curve Base	£107.66	£59.00
A3000 Learning Curve Colour	£160.21	£79.00

Finance Prices Shown above **INCLUDE VAT**

Cables

Description	*Ex. VAT*	*Inc. VAT*
Arc to Monitor + Audio 1.2m (Not 8833 II)	£8.65	£10.16
Arc to 8833 Mk II Monitor Cable + Audio 1.5m	£8.65	£10.16
Arc Monitor Extension Cable 2m	£7.75	£9.11
BBC B to AKF17 Monitor 2m	£8.65	£10.16
Arc Parallel Printer Cable 1.8m	£5.25	£6.17
Arc Parallel Printer Cable 3m	£10.40	£12.22
Arc to BBC Serial Cable 1.2m	£6.95	£8.17
Arc Keyboard Extension Cable 2m	£7.75	£9.11
Arc Mouse Extension Cable 2m	£7.75	£9.11
Arc Keyboard Replacement Cable	£6.95	£8.17
Arc Mouse Replace. Cable (State Type)	£6.95	£8.17
4 way trailing Lead	£7.75	£9.11
Surge protector plug	£10.50	£12.34
4 way protector socket on trailing lead	£17.95	£21.09

We can supply almost any cable made to order. Please call for details.

NEW ADDRESS

Due to continued expansion we are moving once again. Our new showroom will open from Tuesday 5th November, and to celebrate, thousands of bonfires will be lit all over the country! Our old premises will close after business on Thursday 31st October, so we will be closed for a few days during the relocation.

Our new address will be:
250 Leyland Lane, Leyland, Preston, PR5 3HL

A new map will appear in next month's Acorn User to show how to find us. We have, in fact, only moved approximately ¾ of a mile.

A400/1 Accessories

Items marked with an * can be used on A300/540.

Description	*Ex. VAT*	*Inc. VAT*
1Mb RAM Upgrade	£39.00	£45.83
2Mb RAM Upgrade	£75.00	£88.13
3Mb RAM Upgrade	£105.00	£123.38
Above memory fitted for £10.00		
Acorn Ethernet Card	£219.00*	£257.33
Acorn SCSI Card	£239.00*	£280.83
Arm 3 Upgrade (Adelph One)	£349.00	£410.08
4Mb to 8Mb Upgrade	£649.00	£762.57
Com. Con. Scan-Light Mk II A4	£369.00*	£433.58
Com. Con. Sheet Feeder for above	£149.00*	£175.08
Com. Con. Scan-Light + Feeder	£454.00*	£533.45
Com. Con. Scan-Light Junior	£174.00*	£204.45
Com. Con. Scan-Light 256	£205.00*	£240.88
Com. Con. Sheet Feeder for A4	£94.00*	£110.45
Lingenuity SCSI Card	£169.00*	£198.58
Acorn MIDI Expansion Card	£65.00*	£76.38
Acorn I/O Expansion Card	£79.00*	£92.83
Acorn MIDI Upgrade for above	£27.00*	£31.73
VIDC Enhancer	£27.00	£31.73
Econet Module	£48.00*	£56.40
Beebug Disc Buffer	£29.00	£23.08
Orion TV Modulator + Audio	*£65.00**	*£76.38*
Archimedes 540 Only		
4Mb RAM Upgrade (Upto 16Mb)	£479.00	£562.83
VIDC Enhancer (540 only)	£10.00	£11.75

A3000 Accessories

Description	*Ex. VAT*	*Inc. VAT*
Orion 1 Mb RAM Upgrade	£55.00	£64.63
(Expandable to 4Mb using only 8 chips)		
Orion 3 Mb RAM Upgrade	£156.00	£183.30
Serial Upgrade	£18.00	£21.15
Acorn User Port/Midi Card	£46.00	£54.05
Acorn Monitor Stand	£27.00	£31.73
PRES Monitor Stand	£24.95	£29.32
PRES System Housing	£69.50	£81.66
HCCS 45Mb HardCard	£339.00	£398.32
CC Scanlight Junior A3000	£174.00	£204.45
CC Scanlight A4 Mk II A3000	£369.00	£433.58
CC Sheetfeeder for A4 Scanner	£149.00	£175.08
CC Scanlight A4 + Sheetfeeder	£454.00	£533.45
CC Scanlight 256	£205.00	£240.88
RTFM Joystick Interface + S/W Disk	£34.95	£41.07
Serial Port Joystick Interface	£22.95	£26.97
Voltmace DeltaCat Joystick	£26.00	£30.55
Lingenuity SCSI Controller Card	£149.00	£175.08
Orion TV Modulator + Audio	*£65.00*	*£76.38*

Books

Description	*Ex. VAT*	*Inc. VAT*
Programmers Reference Manuals	£77.00	£77.00
BASIC V Guide	£19.45	£19.45
A3000 Technical Guide	£28.95	£28.95
A540 Technical Guide	£65.00	£65.00
Basic V: A Dabhand Guide	£9.95	£9.95
Archimedes First Steps	£9.95	£9.95
Archimedes Assembly Language	£14.95	£14.95
Extra Manuals		
Acorn D.T.P.	£10.00	£10.00
1st Word Plus Release 2	£10.00	£10.00
ANSI C Release 3	£20.00	£20.00
ANSI C Release 4 (Desktop C)	£25.00	£25.00
Acorn Assembler Rel. 2 (Desktop Ass.)	£25.00	£25.00

Orion Bulk Diskettes

All our disks come complete with labels etc. and are 100% certified error free. In the event that a disk fails it will be replaced immediately. Top row of prices ex. VAT. Bottom row of prices inc. VAT.



		Quantity					
		25	50	100	250	500	1000
5¼	DS/DD 96tpi	N/A	£14.00	£26.00	£60.00	£115.00	£210.00
		N/A	£16.45	£30.55	£70.50	£135.13	£246.75
3½	MF/2DD 1Meg	£9.75	£19.50	£34.00	£77.50	£145.00	£270.00
		£11.46	£22.91	£39.95	£91.06	£170.38	£317.25
	Sony Bulk	£12.50	£25.00	£45.00	£106.25	£200.00	£375.00
		£14.69	£29.38	£52.88	£123.84	£235.00	£440.63

Printers

PLEASE NOTE

ALL our printers are UK Models and **NOT** grey imports. Please take this into account when deciding where to purchase your printer.

Description	Ex. VAT	Inc. VAT
C.C. Qume Laser Direct	£859.00	£1009.33
C.C. 600 DPI Expansion Card	£309.00	£363.08
Canon LBP4 Laser for above	£659.00	£774.33
C.C. 600 DPI LBP8 Laser Direct	£1319.00	£1549.83
(Free Impression II with Qume/LPB8 Laser Direct)		
Canon Bubblejet BJ10e (White or Black)	£219.00	£257.32
Citizen 120D+ (Parallel)	£115.00	£135.13
Citizen 124D	£165.00	£193.88
Citizen Swift 9	£162.00	£190.35
Citizen Swift 24	£225.00	£264.38
Citizen Swift 24x	£329.00	£386.58
H.P. Deskjet 500	£339.00	£398.32
Star LC20	£130.00	£152.75
Star LC200 Colour	£175.00	£205.63
Star LC24-200 Mono	£205.00	£240.88
Star LC24-200 Colour	£249.00	£292.58

Ribbons (Branded)

Description	Ex. VAT	Inc. VAT
Amstrad DMP2000/3160	£5.50	£6.46
Canon BJ130 Bubblejet (BJI481)	£10.00	£11.75
Canon BJ10e Bubblejet (BC01)	£16.29	£19.14
Canon BJ300/330 Bubblejet (BJI642)	£12.00	£14.10
Citizen 120D	£3.25	£3.82
Citizen Swift 24 Black	£3.95	£4.64
Citizen Swift 24 Colour	£13.75	£16.16
Colourjet 132/Canon PJ1080 Black	£9.25	£10.86
Colourjet 132/Canon PJ1080 Colour	£14.75	£17.33
Epson LX80/86	£3.75	£4.41
Epson FX80,MX80,LX800	£4.50	£5.29
Epson LQ400,550 Fabric	£5.25	£6.17
Epson MX100,FX1000,FX1050	£5.75	£6.76
Epson EX800/1000 Black	£7.25	£8.52
HP Paintjet Black	£21.00	£24.68
HP Paintjet Colour	£26.00	£30.55
HP Deskjet + (Permanent Ink)	£13.20	£15.51
Panasonic KXP145.KXP115	£7.50	£8.81
Panasonic KXP140	£9.35	£10.99
Star LC10	£3.80	£4.47
Star LC10 4 Colour	£5.75	£6.76
Star LC200 Black	£5.00	£5.88
Star LC200 Colour	£9.75	£11.46
Star LC24/10 / LC24 200 Black	£4.75	£5.58
Star LC24 200 Colour	£11.50	£13.51
Canon LBP4 Toner Cartridge	£55.00	£64.62
Canon LBP8 Toner Cartridge	£62.00	£72.85
Qume Crystal Print Toner Set	£67.00	£78.73
Qume Crystal Print Drum Set	£89.00	£104.58

Ribbons (Comp.)

All of our compatible ribbons are high quality British brand. We do not sell "White Box" compatible ribbons.

Description	Ex. VAT	Inc. VAT
Brother M1009,M1109	£2.95	£3.47
Brother HR10,15,20,25,35 Fabric	£3.25	£3.82
Brother HR10,15,20,25,35 Multistrike	£4.65	£5.46
Canon PW1080A	£3.85	£4.52
Citizen 120D/Swift 24	£3.05	£3.58
Epson LX80,86	£2.25	£2.64
Epson FX80,MX80,LX800,LX850	£2.95	£3.47
Epson LQ500,LQ800,LQ850	£3.00	£3.53
Epson LQ1000,LQ1050,FX1000	£3.50	£4.11
Epson LQ2500,LQ2550	£3.55	£4.17
Epson EX800	£4.45	£5.23
Panasonic KXP1081,1090,1080	£3.65	£4.29
Panasonic KXP1124	£3.55	£4.17
Star LC10	£2.55	£3.00
Star LC10 4 Colour	£5.00	£5.88
Star LC24/10	£3.95	£4.64

Please call for prices on any ribbons not listed here. We can supply almost any ribbon required and, dependent on quantity, any colour.

Please Note - Quoting the KARMA Group Code speeds up our search for a ribbon compatible with your printer.

Archimedes/A3000 Software

Description		Ex. VAT	Inc. VAT
DTP			
Impression II (CC)		£129.00	£151.57
Impression Junior (CC)		£74.00	£86.95
Impression Business Supplement	NEW	£42.00	£49.35
EasiWriter (Icon Technology)	NEW	£134.00	£157.45
Desktop Folio (ESM)		£79.00	£92.83
Spreadsheets			
Sigmasheet (Minerva)		£39.95	£46.94
Schema (Clares)		£99.00	£116.33
WordProcessors			
1st Word Plus Release 2 (Acorn)		£69.95	£82.19
Eas!Word (Minerva)		£31.95	£37.54
Protext 5.0 (Arnor)		£119.00	£139.83
Integrated Packages			
Pipedream 3 (Colton)		£119.00	£139.83
Desk Top Office (Minerva)		£99.00	£116.33
Databases			
Datavision (Silicon Vision)		£127.45	£149.75
Flexifile (Minerva)		£119.00	£139.83
Multistore (Minerva)		£199.00	£233.83
Genesis II (Oak Solutions)		£119.00	£139.83
Knowledge Organiser (Clares)		£42.00	£49.35
Accounting Software			
Financial Accountant (S. Vision)		£233.75	£274.66
Home Accounts (Minerva)		£39.45	£46.35
Business Accounts (Minerva)		£325.00	£381.88
Office Tools (S. Vision)		£318.75	£374.53
Languages			
ANSI C Release 3 (Acorn)		£125.00	£146.88
Desktop C (Acorn)	NEW	£189.00	£222.08
Desktop Assembler (/Acorn)	NEW	£129.00	£151.58
RiscForth (S. Vision)		£127.45	149.75
Music			
Armadeus (Clares)		£61.00	£71.68
Rhapsody II (Clares)	NEW	£44.95	£52.82
Tracker (Serial Port)		£38.95	£45.77
Utilities			
Arc DFS (Dabs Press)		£22.95	£26.97
Dot Matrix Colour Printer Driver (Ace)		£12.72	£14.95
Education			
Fun Sch. 3 Under 5's (Database)	NEW	£18.00	£21.15
Fun Sch. 3 5-7 (Database)	NEW	£18.00	£21.15
Fun Sch. 3 Over 7's	NEW	£18.00	£21.15
Graphics Manipulation			
Poster + Fonts (4Mation)		£79.00	£92.83
Render Bender II (Clares)	NEW	£99.00	£116.32
Solids Render (S. Vision)		£127.45	£149.75
Graphics - Art			
Artisan II (Clares)		£49.95	£58.69
Pro Artisan (Clares)		£79.00	£92.83
Atelier (Minerva)		£79.00	£92.83
Clipart Coll. Vol. 1 (General)		£19.95	£23.44
Clipart Coll. Vol. 2 (General)	NEW	£25.49	£29.95
Clipart Coll. Vol. 3 (Animals)	NEW	£25.49	£29.95
Clipart Coll. Vol. 4 (Sport)	NEW	£25.49	£29.95
Clipart Coll. Vol. 5 (Characters)	NEW	£25.49	£29.95
Misc			
PC-Emulator V1.6 (Acorn)	NEW	£94.00	£110.45
Investigator II (Serial Port)		£22.95	£26.97

Monitors

Description	Ex. VAT	Inc. VAT
Acorn Colour Monitor (AKF17)	£200.00	£235.00
Philips CM8833 II Colour Monitor	£209.00	£245.58
Microvitec CUB 3000	£199.00	£233.83
Taxan MultiVision 775 (0.28 d.p.)	£389.00	£457.08
Taxan MultiVision 795A (0.26 d.p.)	£469.00	£551.08
(FST Black Trinitron Anti-Glare Tube)		
Taxan Viking II (19" Mono, MS)	£749.00	£880.08

Games

Description		Ex. VAT	Inc. VAT
Arcpinball (Shibumi)		£18.00	£21.15
ARCticulate (4th Dim.)		£18.00	£21.15
ARCtist (4th Dim.)	NEW	£18.00	£21.15
Ballarena (Eterna)		£14.45	£16.98
Blowpipe (Eclipse)		£14.45	£16.98
Blaston (Eterna)		£14.45	£16.98
Boogie Buggy (4th Dim.)		£18.00	£21.15
Break 147/Superpool (4th Dim)	NEW	£18.00	£21.15
Bubblefair (Eterna)	NEW	£14.45	£16.98
Chess 3D (Micropower)		£14.45	£16.98
Chequered Flag (CIS)	NEW	£18.00	£21.15
Chocks Away Version II (4th Dim.)		£18.00	£21.15
Chocks Away Extra Missions		£14.45	£16.98
Chocks Away Compendium		£28.00	£32.90
Chuck Rock (Krisalis)	NEW	£19.00	£22.33
Drop Ship (4th Dim.)		£14.45	£16.98
E - Type (4th Dim.)		£14.45	£16.98
E - Type 100 Miles (4th Dim.)		£12.75	£14.98
Fine Racer (Eterna)		£14.45	£16.98
Holed Out (4th Dim.)		£14.45	£16.98
Holed Out Designer (4th Dim.)		£14.45	£16.98
Holed Out Vol. 1 or 2 (4th Dim.)		£12.75	£14.98
Hostages (Superior)		£14.45	£16.98
Iron Lord (Cygnus)		£14.45	£16.98
Inertia (4th Dim.)		£14.45	£16.98
Interdictor 2 (Clares)		£26.00	£30.55
Lemmings (Krisalis)	NEW	£19.00	£22.33
Mad Professor Mariarti (Krisalis)		£14.45	£16.98
Manchester Utd. (Krisalis)		£19.00	£22.33
Manchester Utd. Europe (Krisalis)	NEW	£19.00	£22.33
Master Break (Superior)		£14.45	£16.98
Microdrive 3D USA Courses		£10.45	£12.28
Microdrive 3D European Co.	NEW	£10.45	£12.28
Mig-29 Fulcrum (Domark)	NEW	£29.00	£34.08
Minipack 5 (C.I.S.)		£23.95	£28.14
Nevryon (4th Dim.)		£14.45	£16.98
No Excuses (Arcana)		£14.45	£16.98
Poizone (Eterna)	NEW	£14.45	£16.98
Powerband V. II (4th Dim.)		£18.00	£21.15
The Real McCoy 1 or 2 (4th Dim.)		£21.50	£25.26
Turtles Tour the World (E. Crayon)		£14.45	£16.98
Twin World (Cygnus)		£14.45	£16.98
Saloon Cars (4th Dim.)	NEW	£18.00	£21.15
Speech (Superior)		£14.45	£16.98
Wimp Game (4th Dim.)		£14.45	£16.98
World Champ. Boxing Man. (Krisalis)		£19.00	£22.33
World Champ. Squash (Krisalis)	NEW	£19.00	£22.33
Wonderland (Virgin)		£24.50	£25.79
Zelanites (MicroPower)	NEW	£18.00	£21.15

Please ring for current prices on software NOT listed here

AU Show

11th-13th October

New Products Are:

Description	Ex. VAT	Inc. VAT
A3000 Podule Expansion System	£54.95	£64.57

2 slot external podule expansion case allowing the use of two compatible 400 series cards simultaneously.

For example, the CC Laser Direct Card with an Orion IDE Interface.

Description	Ex. VAT	Inc. VAT
IDE Interface and drives for Archimedes and A3000's		
400 Series IDE Interface	£119.00	139.83
IDE Drive for use with above		
Standard Range		
20Mb Drive	£75.00	£88.13
43Mb Drive	£119.00	£139.83
85Mb Drive	£179.00	£210.33
200Mb Drive	£389.00	£457.08
Professional Range		
50Mb Drive	£179.00	£210.33
125Mb Drive	£299.00	£351.33
210Mb Drive	£519.00	£609.83

Both ranges of drives come complete with everything required to get the drive installed and running in your machine.

PERFECTING THE PAGE

GRAHAM BELL explains how you can get the most out of desktop publishing, in our continuing series covering major applications

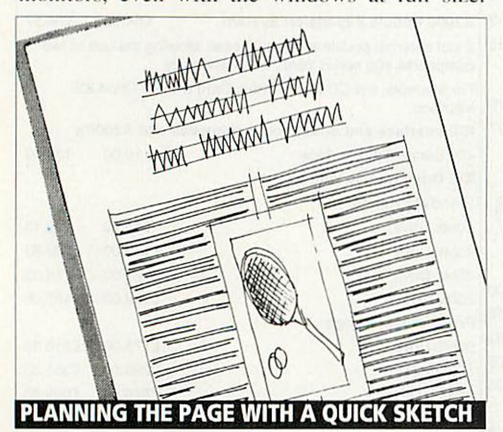
The Archimedes was almost made for desktop publishing. With multi tasking, a Wimp environment, and outline fonts it is capable of running sophisticated DTP systems. Add a good range of printer drivers to that list and it becomes an unbeatable combination. Acorn's *Desktop Publisher* application (*ADTP*), which is included in some Learning Curve packages, is many people's introduction to desktop publishing. It isn't really suited to 'professional' use – for this *Impression* or *Ovation* are better – but the principles and skills learned with *ADTP* are easily transferred to more advanced packages.

All of these Arc DTP packages are described as 'frame based'. What this means is that anything you put on a page – some text or an illustration – has to go in a box, or frame. The size of the box controls the width of a column of text or the size of a picture. By moving the box you can move the text or illustration around the page as a block. Several frames can be put on one page and they can contain text, pictures, headlines, logos and so on, building up the image that you want.

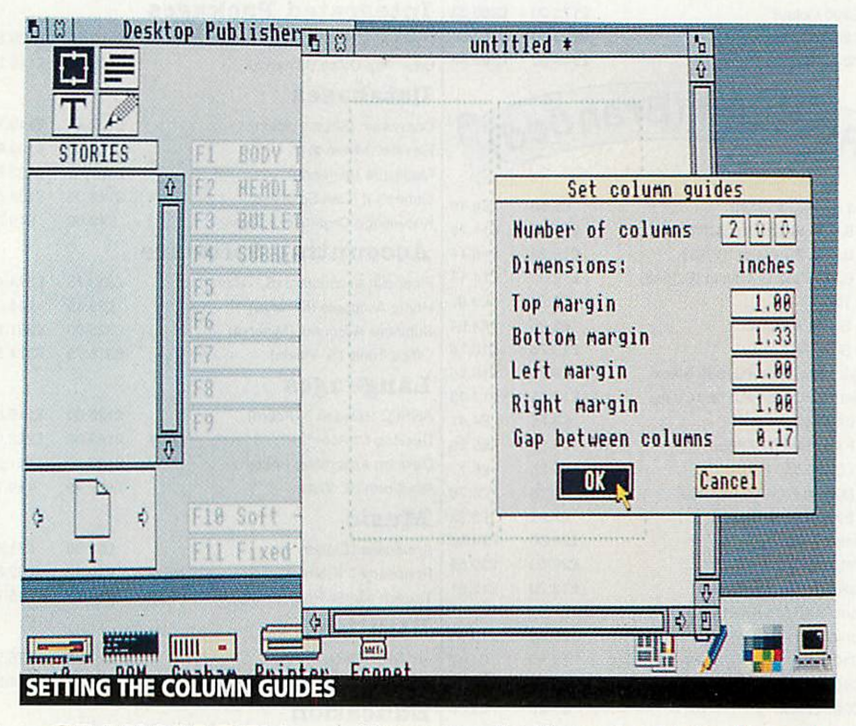
A frame can hold one of four types of object; text you type in, text imported from a text file, a drawing or a sprite. So *Acorn Desktop Publisher* does not form a complete system on its own – you need applications like *Draw* or *Paint* to create illustrations and *Edit* or a wordprocessor to create the original text.

ADTP runs like any Risc OS software. Clicking on its icon bar icon opens two windows, one represents the blank page you are working on, and the other is the tool panel. With any new document the first thing to decide is the size of the margins, columns and so on. It's tempting to cram text on to a single page, leaving no space around the edges – but documents are more attractive and easier to read if you leave generous margins.

The page shown in in the sketch could be suitable for a school magazine. To create a similiar document, you can set the margins in the following way. Choose Set Column Guides from the Page sub-menu: the dialogue box allows you to type in the sizes of the margins. One inch all round should do it, with two columns. Press RETURN or click on Okay and you will see the green dotted guidelines in the page window have changed. Pressing SHIFT-F11 brings the whole page into view so you can see it all. Conversely, SHIFT-F9 zooms in on the page to full size, but you can't see all of it on most monitors, even with the windows at full size.



PLANNING THE PAGE WITH A QUICK SKETCH



SETTING THE COLUMN GUIDES

You can use the View sub-menu to change the size too. Make the window fill the whole screen, then press SHIFT-F11 so you can see the whole page. Now drag the page window right, so you can see the four main icons in the toolbox too – this arrangement is convenient for most work.

The green guidelines make it easy to draw frames at the right places on the page – frames that you draw can be aligned, or snapped, to the guides. Click on the Frame mode icon (the top left icon in the toolbox), put the pointer on the page, and drag out a box. The red rectangle with eight handles or 'ears' is a frame – you can drag the ears to adjust the size of the frame and to snap the edges to one of the green column guides. Notice how the pointer changes shape – it's normally a cross-hair in Frame mode, but it changes to a hand if you try to drag the frame's ears. You can also drag the whole frame around by holding Select down in the middle.

Now there's a frame on the page, you need some text to go in it. *ADTP* can import files from *First Word Plus*, and it retains all the bold, italic and underline highlights, or it can import plain text from *Edit*. With *Edit*, you need to separate the paragraphs with a blank line. The example document has about 400 words in the main text.

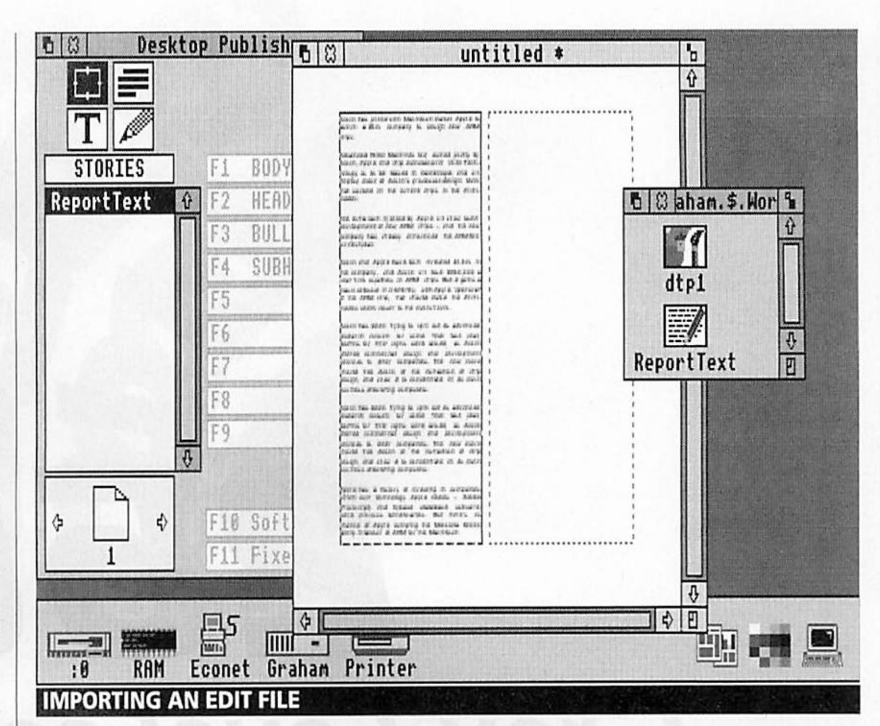
To put the text on the page, make sure you're in Frame mode, click in the frame so that its ears

show, then drag the text file icon on to the frame. The text – or part of it – will appear in the frame. If there's some text missing, then the bottom of the red frame is dotted.

Also, the name of the text file appears in a list of 'stories' in the toolbox. This is the key to extending the text. You can't just make the frame bigger if all the text doesn't fit, because each column of text has to be in its own separate frame. You can draw a second frame on the right of the page in exactly the same way as the first. Align it with the green guides by dragging its ears, so it's the same size as the first frame.

Now, to make the remainder of the text 'flow' into the new frame, make sure it's highlighted (the ears show), then click on the name of the text file in the list in the toolbox. If it's not there, don't panic. There are three lists for stories, sprites and line art. Just click where it says Line Art or Sprites, until the Stories list appears.

The remainder of the text should now appear in the new frame, partly filling it. The point about 'flowing' is that if you shorten the first frame, text won't be lost – more will overflow into the second frame.



IMPORTING AN EDIT FILE

STYLES

When you import plain text like this, it assumes a style called 'Body Text'. This is usually the Homerton typeface at 10 point size – a bit bigger than the text in this magazine. By altering the 'style sheet' for Body text, you can alter the look of all the text that uses this style.

To do this, you need to use Paragraph mode. *ADTP* is modal: that is, in one mode certain options are available, in another mode a different set of options are available. In Frame mode you can draw frames and place text files: changing text styles is done in Paragraph mode, To select Paragraph mode, click on the top right of the four icons in the toolbox.

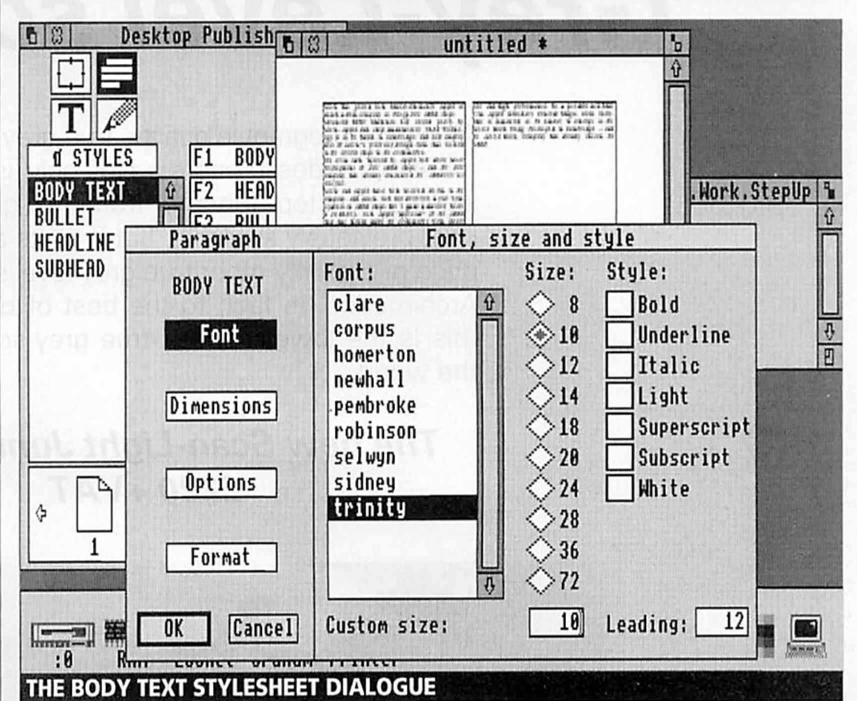
Now a list of four style sheets appears in the toolbox – so double-click on Body text. A new four-part dialogue appears. The first part allows you to change the typeface and size: for this document, change it to Trinity, 10 point on 12 point leading. The 10pt is the size of the text and the 12pt is the distance between each line. The other three parts of the dialogue can be reached by clicking the buttons on the left: the only one you need to change is Dimensions. This controls things like the indent on the first line of each paragraph and the gaps between paragraphs. You want the produce text in a more solid form, so reduce the Space above paragraph to zero and set the First line indent to 0.17in. Now click on Okay. You'll see the text re-arrange itself to your new specification, smaller and without the gaps between paragraphs.

Some of the paragraphs in the text are just single words – little headings within the text to break it up into readable, organised chunks. These are called crossheads, and you need to create a brand new style sheet for them. Press Menu and choose New style from the Paragraph submenu. Now make a copy of Body text and call it 'Crosshead'.

In the style sheet dialogue, you can make the crossheads Homerton, bold, 10pt on 12pt leading. In the Dimensions section make the Space above 0.17in, first line indent zero, then click Okay. Of course, Crosshead style isn't used in the text yet, so nothing changes. But in Paragraph mode, you can click Select on the crosshead – it turns black – then choose a new style for it from the list in the toolbox. In this way you can change all the crossheads to the Crosshead style.

There is also plenty of space on the page for a headline and a picture. Return to Frame mode, and put in a new frame at the top of the page to hold the headline. As soon as you put in the frame, you will see the text re-arrange itself out of the way, because the new frame repels the text downwards.

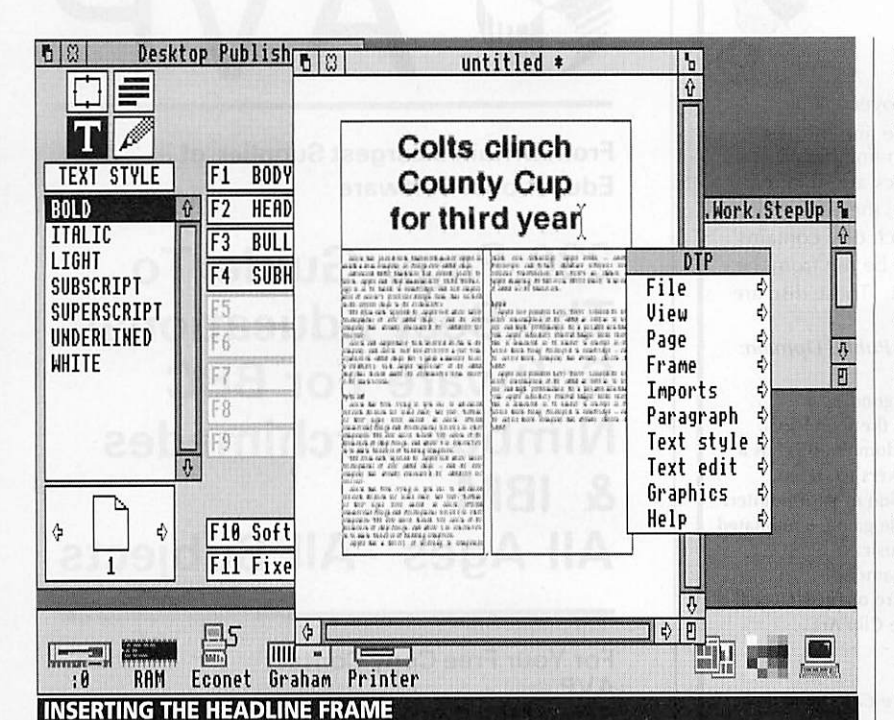
To type the headline in, you use Text mode: the T icon in the toolbox. Click the T, then click into the new frame and type the headline – of course, it assumes the Body text style at first so



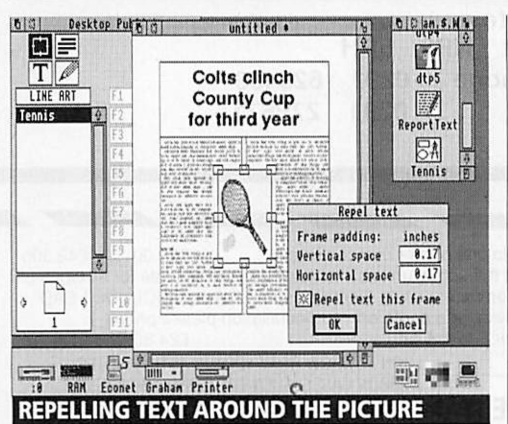
THE BODY TEXT STYLESHEET DIALOGUE

1MB MACHINES

ADTP can be run on an Arc with only 1Mb of memory, but it's a tight fit. The ideal is at least a 2Mb machine with a hard disc – but the memory is more important than the disc if you have to make a choice. The lack of memory slows ADTP down and limits the complexity of documents you can create. You'll have to follow the configuration advice in the ADTP release notes carefully. When you want to print, changing screen mode 0 using the Palette application will speed things up a lot.



INSERTING THE HEADLINE FRAME



REPELLING TEXT AROUND THE PICTURE

it's too small. Now choose Paragraph mode, highlight the headline then choose Headline style from the toolbox. It's probably still the wrong size, so you can alter the Headline style-sheet in the same way as you did for Body Text: double-click on Headline in the toolbox list then change things in the style-sheet dialogue. The headline in the example is 48pt Homerton bold with no space above paragraphs and no indents. You can also centre it in the frame using the last, Format section of the dialogue.

Finally the picture. This requires a new frame, but centred on the page. The best way is to reset those dotted-green page guides. From the Page sub-menu (you need Frame mode again), change the column guides to give three columns instead of two. You can't see the guides, as they are hidden by the main text frames, but a new frame will still snap to them easily. Adjust the height of the frame by dragging the top and bottom ears, so the main text just fits – note again the new frame repels the text away from its sides. You can change just how far it repels with the Repel text option on the Frame submenu: distances of 0.17in to the left and right are about right.

To add the illustration, you need only drag in a Sprite or Draw file into the frame – it could be a scanned photograph or a drawn logo for example. You can now save your document in the normal way, or print it out. If you've got access to a laser printer, great. But even dot-matrix machines can produce remarkably good results.

If you find you want to make minor amendments to the text, you can edit it using Text mode – and you'll probably want to zoom in to double size with SHIFT-F8. But you cannot export the text back to Edit or a wordprocessor for more major surgery, nor can you re-export drawings or spirtes. So it's important to get things right – and don't delete the originals, just in case. Using Text mode you can alter things like the size and typeface of the text, as well as picking out sections in bold or italic. But don't use this technique to make changes like making up a heading – set up a new style sheet instead.

HINTS AND TIPS

One of the problems with *ADTP* is that when you import a picture the original proportions are lost – it gets stretched or squashed to fit the space available in the frame. For most pictures, there is a way to get round it. First, note the exact width and height of the *ADTP* frame – double-clicking on a frame pops up its dimensions. Then in Draw, use Select all, then Group all the elements of your picture together. Use Magnify to change the picture to the right size using the grid as a guide.

Now select the Rectangle tool and draw a border around your picture. Using the grid, make the border exactly the same size as the *ADTP* frame, and ensure it encloses all of your original picture. Once it is right, select the border and change the Line colour to None. Save, and import into *ADTP*. The same thing applies to sprites – remember that they can be imported into Draw too.

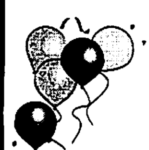
Consistency is one of the better signs in a publication. With the school magazine page for example, you might want lots more pages to share the same style. The best way to achieve this is to use the 'Master Page'. Use Goto on the Page submenu to open the Master page. On this page, put two new frames like the main text frames on the real page – you might want to reset the page guides to two columns first. Now use Goto to return to page one. Nothing will have changed. But click on the right arrow at the bottom of the toolbox, as if turning a new page in a book. *ADTP* creates a new page – but instead of being blank, it inherits the features of the master page. The master itself never prints out – it's only used as a basis for any new pages you create. If every page has a logo, for instance, you can put it on the master.

If you want consistency throughout several documents, a kind of 'house style', then a 'template file' is an extension of this idea. Once you've set up your master page and created all the necessary style sheets, you can save a 'template' – essentially it's a document without any text. In fact the menu option is Save style sheet – but it saves all the styles and the details of the master page too.

For the next document, double-click on this template file, and you'll have a fresh, blank document, but all the styles and so on will be the same as for your original – again encouraging consistency and making for an impressive look.

DESIGN HINTS

- Try to work out what you want your document to look like before you begin, leave plenty of room for margins and headlines, and don't try to cram too many things on the page.
- Don't underline words for emphasis; bold or italics look better, or use blobs from the Selwyn font to pick out items from a list.
- Use the right character. For example, use x not X for multiplication. Don't use ', use ' (ALT-145). Dashes – like ALT-151 – are longer than hyphens (-). The full table of characters is in the back of the ADTP manual.
- Don't try anything too complex with ADTP. It has limitations you can't get around (no fractionally leading, condensed text is impossible). So move on to a more advanced application as your needs grow.
- Buy a book like Introduction to DTP by John Miles to learn more about typography and design.



The Datafile PD

Super Catalogue/Demo disc III



This disc has been archived and contains over 1700k of the highest quality public domain software and the 104 page catalogue that discribes over 290 discs in fine detail.

We now have two types of disc, the standard discs are still great value at only £1 each. We also have super discs, these have been archived and contain at least 1.5 megs of PD. Each disc contains Mike Smiths !ArcFS so that the archived files can be run from the desktop without the need to de-archive them first. These disc are only £1.25 each.

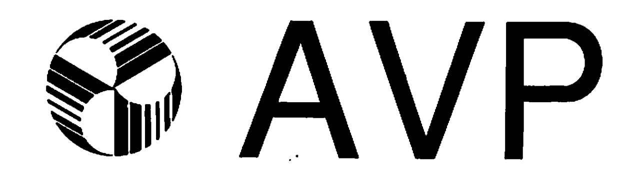
Catalogue/Demo disc III contains the following Public Domain:

!Boot - A suprise when you boot up the disc.
!ChapDemo - An animated raytraced demo, its very good.
!IVSearch - An application to search your discs for the Icon Virus.
!PlayMod - The best STracker player in the public domain, this has a lot of great features such as converting standard trackers to stereo.
!Reverse - This is for fun and it reverses the direction of your pointer.
!SLIDE - The best British demo to date, a playable game, 6 animated TV screens and a CD style front end to control the music.
!Yatzy - A desktop version of this popular dice game.
!ZoomerBox Desktop special effect when windows are opened/closed.
Clothes - A very good STracker module - plus some Clip Art.

Special offer until the end of the year !!!!

Send The Datafile £10 and we will send you the above Cat/Demo disc and a voucher for 12 discs of PD or for every 10 discs you buy we will give you 2 standard discs free.
SEND ALL ORDERS TO,
22 Duxford Drive, Aldergrove, Co.Antrim, N.Ireland, BT29 4BG

If you are an author of Public Domain software, we will give you free discs for your latest releases. Just send your work to the above address.



From Britain's Largest Supplier of Educational Software

230 Page Guide To The Best Educational Software For BBC Nimbus Archimedes & IBM
All Ages · All Subjects

For Your Free Copy Contact
AVP
School Hill Centre
Chepstow
Gwent NP6 5PH
Telephone 0291 625439
Fax 0291 279671

CARE ELECTRONICS

Dept. AU, 15 Holland Gardens, Garston Watford, Herts. WD2 6JN
Tel: 0923 672102 Fax: 0923 662304

For your convinence first price Ex VAT, Second inc VAT

CARE MASTER ROM CARTRIDGES

For Interface and Spellmaster etc.

1. Dual cartridge takes 2 Rom £10.40 £12.22c
4. Quad Cartridge takes 4 Roms including double height type £14.00 £16.45c

CARE MASTER SMART CARTRIDGE

At the press of a button halt any program running and execute any one of a host of useful built in, or user defined functionss and once completed will return to program and continue. Built in functions include – Tape to Disc, Screen Dump to Disc or Printer, Sound On/Off, Auto save and much more £30.00 £35.25c

BBC B ROM CARTRIDGE SYSTEM

BBC B Low Profile Rom System	£12.80	£15.04c
BBC B Spare Cartridges	£3.20	£3.76c

CARE READY MADE LEADS RANGE

BBC/Master RGB-Euro (Scarf)	£8.80	£10.34c
BBC/Master RGB-7 Pin Hitachi	£7.20	£8.46c
BBC/Master RGB-7 Pin Ferguson	£7.20	£8.46c
Centronics to Centronics Printer	£10.00	£11.75c
User Port Extension lead 0.5M	£8.80	£10.34c
1MHz Bus Extension lead 0.3M	£10.00	£11.75c

Wide range of leads in stock – please phone

LABELMASTER

For BBC Model B £15.20 £17.86c

LABELMASTER PLUS

For Master Series, Archimedes anmd A3000. Very powerful yet extremely easy to use. Includes user definable label sizes and mailing list facilities £17.20 £20.21c

PRINTER SWITCHERS

Two computers to one printer or vice versa	£20.00	£23.50b
Three computers to one printer or vice versa	£30.00	£35.25b
Four computers to one printer or vice versa	£36.00	£42.30b

Please note that the above units switch all lines, are suitable for all types of printers and computers using Centronics Parallel and INCLUDE LEAD
For advice or a quote on your installation please phone.

User port switcher 2 to 1 & off £24.80 £29.14d

RECYCLE IT

DON'T THROW AWAY YOUR PLASTIC PRINTER RIBBON CASES WHEN THE RIBBON WEARS OUT. JUST TAKE THE TOP OFF, TAKE OUT THE OLD RIBBON AND RELOAD IT WITH A NEW ONE. IT'S SIMPLE. FULL INSTRUCTIONS SUPPLIED.

RELOADS FOR:- STAR LC200 9 PIN 4 COLOUR (NORMAL INK) 5 RELOADS ONLY £23.50
STAR 24 PIN 4 COLOUR (NORMAL INK) 5 RELOADS ONLY £28.20
CITIZEN SWIFT 4 COLOUR (NORMAL INK) 5 RELOADS ONLY £39.95

NORMAL INK RIBBONS AVAILABLE IN GOLD, SILVER, MAGENTA, ORANGE, PURPLE, BROWN, GREEN, BLUE, RED. FOR A WIDE RANGE OF PRINTERS.

STOP PRESS — RELOADS NOW AVAILABLE FOR A HUGE RANGE OF PRINTERS. SEND FOR PRICE LIST. — STOP PRESS

T-SHIRT PRINTING RIBBONS

Print onto normal computer paper, and iron on to T-Shirt.

4 Colour Star LC10	£14.57
4 Colour Citizen Swift (9 or 24 pin)	£29.61
4 Colour LC200 (9 pin)	£29.61
4 Colour LC200 (24 pin)	£33.84
1 Colour Citizen 120 D/Swift	£7.99
1 Colour Star LC10	£8.46
1 Colour all Star 24 Pin	£10.34
1 Colour Epson FX80/LQ400/MX80	£7.52
Panasonic 1080/81, 1180	£10.34
Epson LX80	£6.11
Epson FX100/MX100	£9.40
Heat Transfer colour pens set of 5 large	£11.28
Heat Transfer colour pens set of 5 small	£9.87

PLEASE STATE TYPE WHEN ORDERING

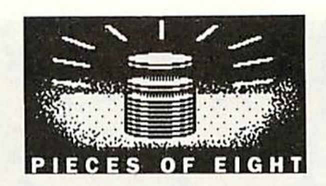
T-SHIRT RIBBONS NOW AVAILABLE IN RED, BLUE, GREEN, YELLOW AND BLACK AND FOR A WIDE RANGE OF PRINTERS

Phone our order line on 0923 894064

ANSWERPHONE OUTSIDE NORMAL HOURS FAX 0923 672102

Government & Education orders welcome. How to Order: Enclose your cheque or P/Order made payable to CARE ELECTRONICS. Access or Visa welcome. Please allow 7 days for delivery.
Please add Post & Package – a=£11.50, b=£3.45, c=£1.38, d=£2.30



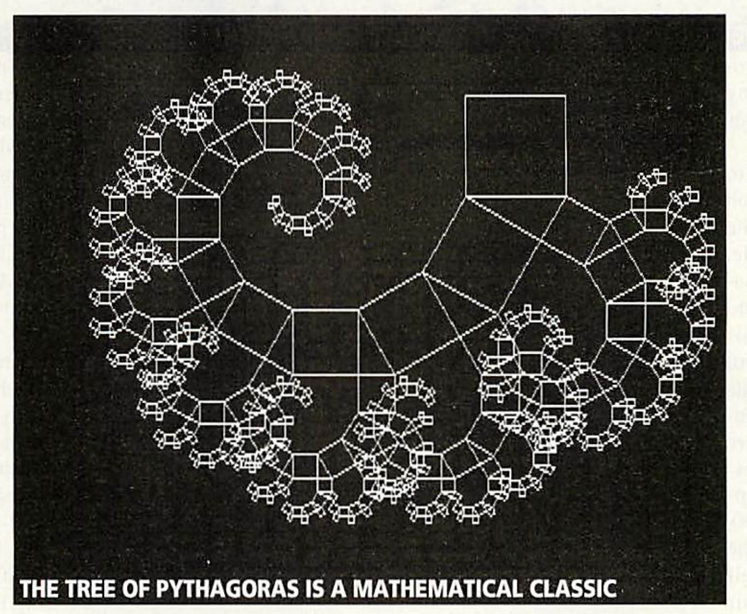


LIFE IN THE TREES

DAVE LAWRENCE revises Pythagorus, builds an automaton and wrestles with words in our series of eight-bit-program classics

During World War 2, a Dutch engineer, Bosman, was made to work on submarine design by the Nazis. Resenting this forced labour, he resolved to work as slowly as possible.

One morning, while he was considering Pythagoras' theorem of right-angled triangles, he wondered what would happen if two new triangles were drawn on to the side of the original squares. He then wondered what would happen if two new squares were drawn on to these triangles. All he had was a pencil, a ruler and a large piece of paper so he started drawing.



THE TREE OF PYTHAGORAS IS A MATHEMATICAL CLASSIC

Needless to say, the submarine was never finished, but the 'tree of Pythagoras' was discovered and now with the aid of modern computers it can be explored to levels that Bosman probably never dreamed of.

Albert's original article (in issue 55, February 1987) featured three listings. These have been combined into one program, *Pythagoras*, which can be found on the yellow pages. When you run the program you will be asked for six parameters to describe the tree you want to create. The first two, x coordinate and y coordinate represent the centre of the first square drawn. This square is the largest and can be thought of as the tree's root. Initial size sets the dimensions of this root square and the value is, in fact, half the length of one side of the root square.

Of course, it is not possible to completely draw a tree, as they are recursive in nature and therefore of infinite complexity. A form of limitation needs to be incorporated, so that the program will terminate at some point. The minimum size parameter sets the point at which the recursion stops. If a square 'branch' is smaller than this value, then no further triangles are added.

The start angle is the angle inside the triangles. Bosman's original tree was based on an isosceles triangle (one with two sides of equal length) so the angle was 45°. By varying this value, many different types of tree can be discovered. The final parameter is Alternation and this allows the start angle to be altered as the tree is being drawn. The 'root' square has a value of 0, the two squares on its triangle have value 1, the four squares on their triangles have value 2 and so on. This can, for instance be set so that if the value MOD alternation is zero, the angle used for the triangle is subtracted from 90°. So entering 30 for the angle and two for the alternation, the angle will swap between 30° and 60°. Table 2 shows a few example sets of values for you to try.

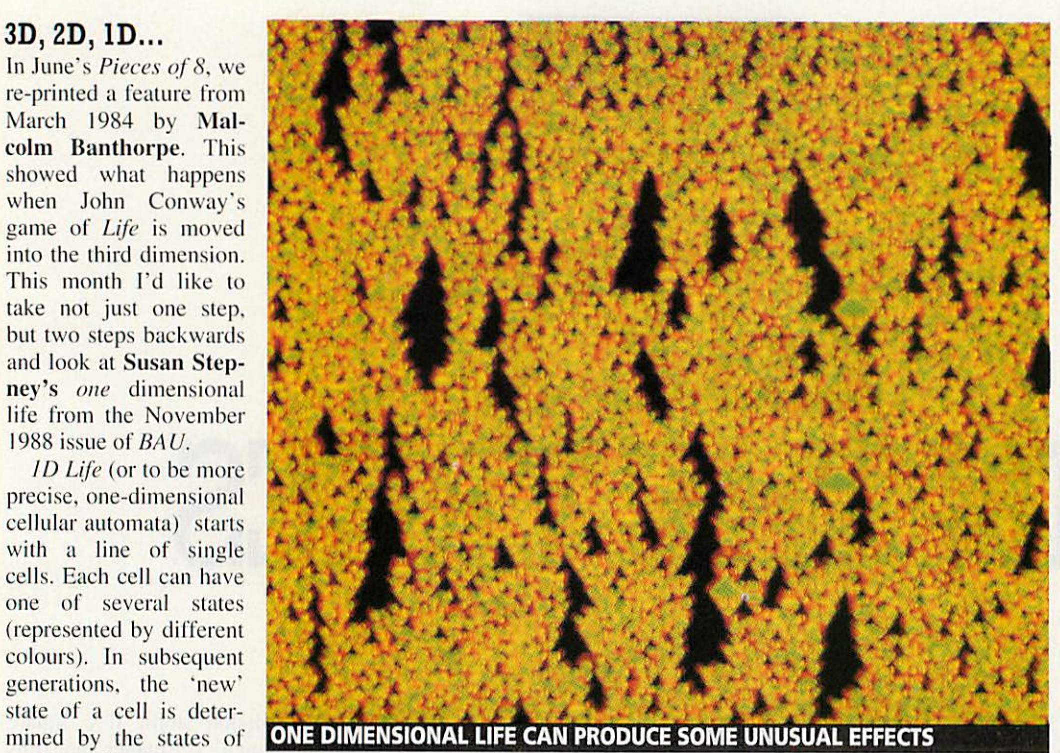
The program itself is relatively simple. As is often the case, the dirty work is performed by a recursive procedure, called DEF PROCtree. The co-ordinates of the root square and the apex of its triangle are passed to PROCtree. This first checks if the square is large enough to draw and if so, plots the two squares on the sides of its triangle. A little bit of trigonometrical jiggery-pokery is perfomed to calculate the co-ordinates of the next level of 'branches', then PROCtree is called recursively to deal with them.

Note that the root square itself is drawn outside the procedure and PROCtree in fact draws pairs of branches. This is not really the best way to write a recursive procedure but all the same, it does illustrate the fascinating world of Pythagorean trees.

3D, 2D, 1D...

In June's *Pieces of 8*, we re-printed a feature from March 1984 by **Malcolm Banthorpe**. This showed what happens when John Conway's game of *Life* is moved into the third dimension. This month I'd like to take not just one step, but two steps backwards and look at **Susan Stepney's** *one* dimensional life from the November 1988 issue of *BAU*.

1D Life (or to be more precise, one-dimensional cellular automata) starts with a line of single cells. Each cell can have one of several states (represented by different colours). In subsequent generations, the 'new' state of a cell is determined by the states of nearby cells. The patterns produced are created by displaying generations on adjacent lines down the screen.



ONE DIMENSIONAL LIFE CAN PRODUCE SOME UNUSUAL EFFECTS

The cells evolve according to a given rule which is based on N, the neighbourhood, and S, the number of states. For example, the simplest, interesting automaton has two states (0 and 1) and a neighbourhood of 1. This means that, when working out the future of a given cell only its immediate neighbours are considered. With this situation there are only eight possible 'cases' that can arise. These can be represented by 111, 110, 101, 100, 011, 010, 001 and 000 where the middle digit represents the cell in question and the outside pair represent its neighbours.

A rule for evolution can be given in one of two ways - as an explicit 'rule number' or a 'totalistic' code. A rule number can be obtained by writing down the resulting state for the given cell in each possible 'case'. For example, with N=1 and S=2 (as above) if you wanted a cell to be created when it has only one neighbour, the rule would be 01011010. A totalistic code is lot simpler; the sum of each case is calculated (32212110) and an outcome given for each total.

1Dlife on the yellow pages will display automata based on totalistic codes. Example data can be found in table 3. If you'd like to fiddle with rule numbers, make the following changes:

```
550 index%=index%*s%+?
    (a%+i%+k%)
730 dim%=s%^(2*n%+1)
```

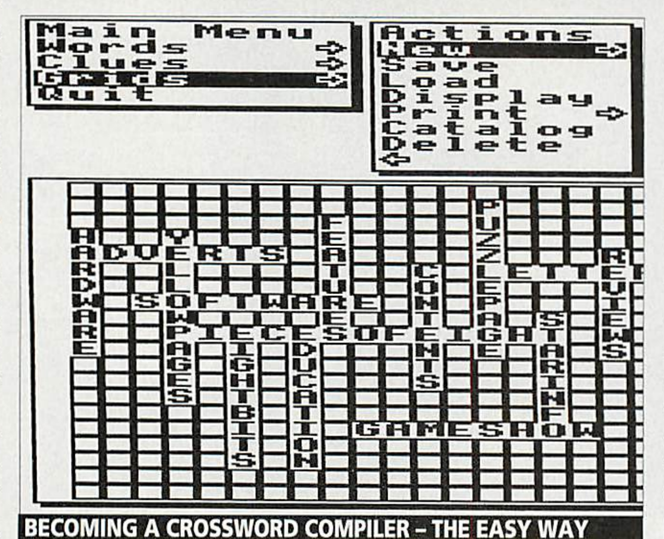
Rules fall broadly into four different groups. These are instant death, simple structures, continuously growing structures and chaos. The 'game' is to try and find the prettiest ones!

DAVE LAWRENCE revises Pythagorus, builds an automaton and wrestles with words in our series of eight-bit program classics

CROSSED LINES

In the same issue as the original *1D Life*, **Joe Telford** wrote a crossword compiler in his Jottings column. Given the popularity of *BAU's Puzzle Page* crossword, we thought this a timely moment to resurrect Joe's original program.

There are essentially two approaches to building a crossword. You can either start with a grid, create a pattern of black squares and then fill in whatever words fit. Alternatively, you can start with a list of words, based on a theme, and try to fit them together. Joe thought that the latter method was suitable for conversion to a computer and his program will accept a list of words and attempt to fit them on to a grid. Once successful, you are invited to enter a clue for each word. The final puzzle can be saved, edited or printed out.



BECOMING A CROSSWORD COMPILER – THE EASY WAY

Unfortunately, the main part of the program (*CWD2*) is a trifle on the large size and will only fit on a Master or Beeb with shadow Ram. If you have access to a toolkit Rom, the listing can be 'crunched' to fit in a standard Beeb, but you will have to carefully change the function names in the DATA statements at the end of the program. The program uses directories W, X and C, so NET and ADFS users will have to create these first. Lines 6770 and 6780 should be changed according to the filing system you use.

```
DFS:    *DIR $
        REM
NET:    *DIR
        *DIR dir1.dir2...
ADFS:   *DIR ^
        REM
SJ:     *DIR ^
```

The compiler program is menu-driven. Items can be selected with the up and down cursor keys and 'chosen' by pressing RETURN. Selections marked with arrows lead to sub-menus. To create a crossword, select New from the Actions sub-menu of Words and type in your word list. To build the crossword itself, choose New from your Grids menu. You have the option of either Tight or Open – try both possibilities and you will soon see the difference!

Type in clues from the New option on the Clues menu. Finally, select Print from the Grids menu and Print from the Clues menu to print your puzzle out. Joe recommends that words, grids, and clues are saved at each stage by selecting the Save option from the relevant menu.

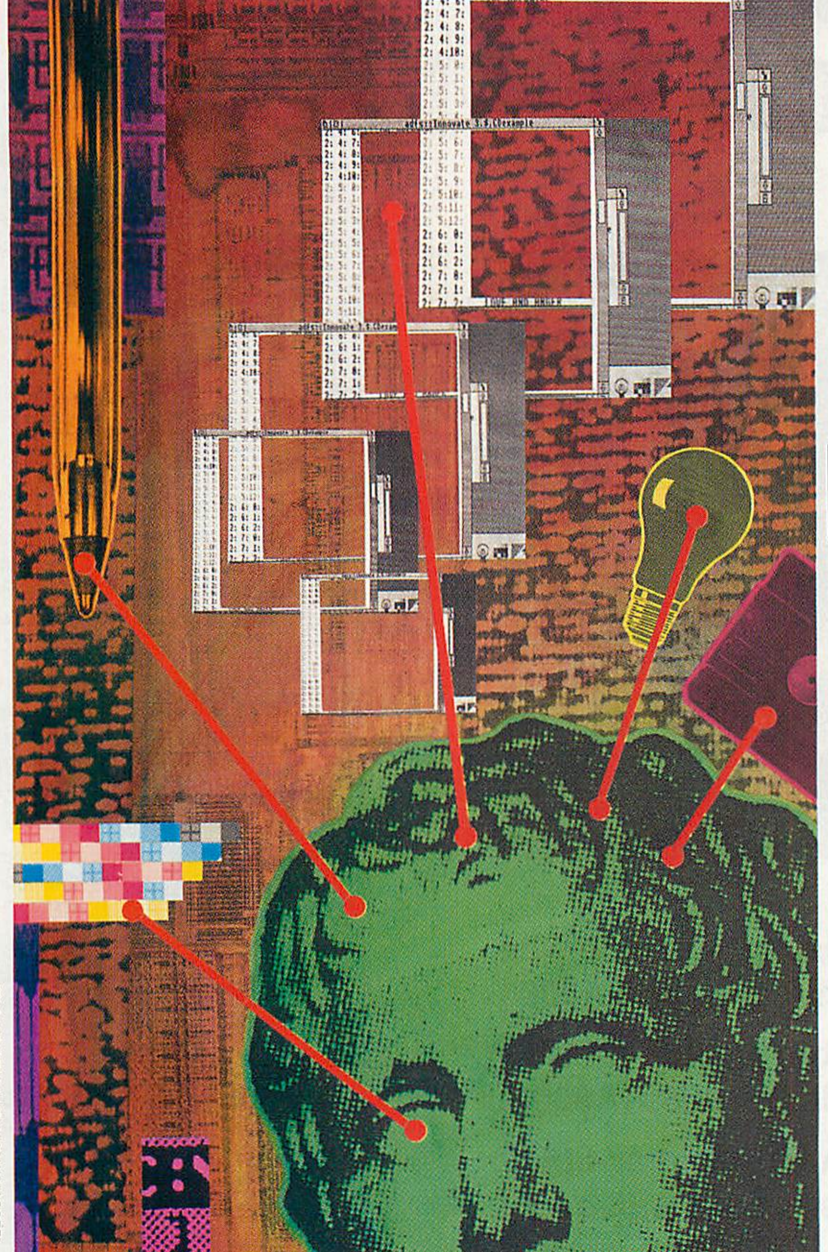


ILLUSTRATION BY PAUL DAVIES

MENU MAGIC

Windows and menus can be a daunting prospect for programmers. **TONY PATTERSON**, the creator of the Innovation ideas processor, shares the secrets of his success

For many people new to programming on the Archimedes, the prospect of writing programs that are co-operative and multi-tasking can be daunting. However, it needn't be so, if you know a few tricks of the application-writing trade. Remember that you don't have to write everything from scratch – the windowing system can do an awful lot of the hard work for you.

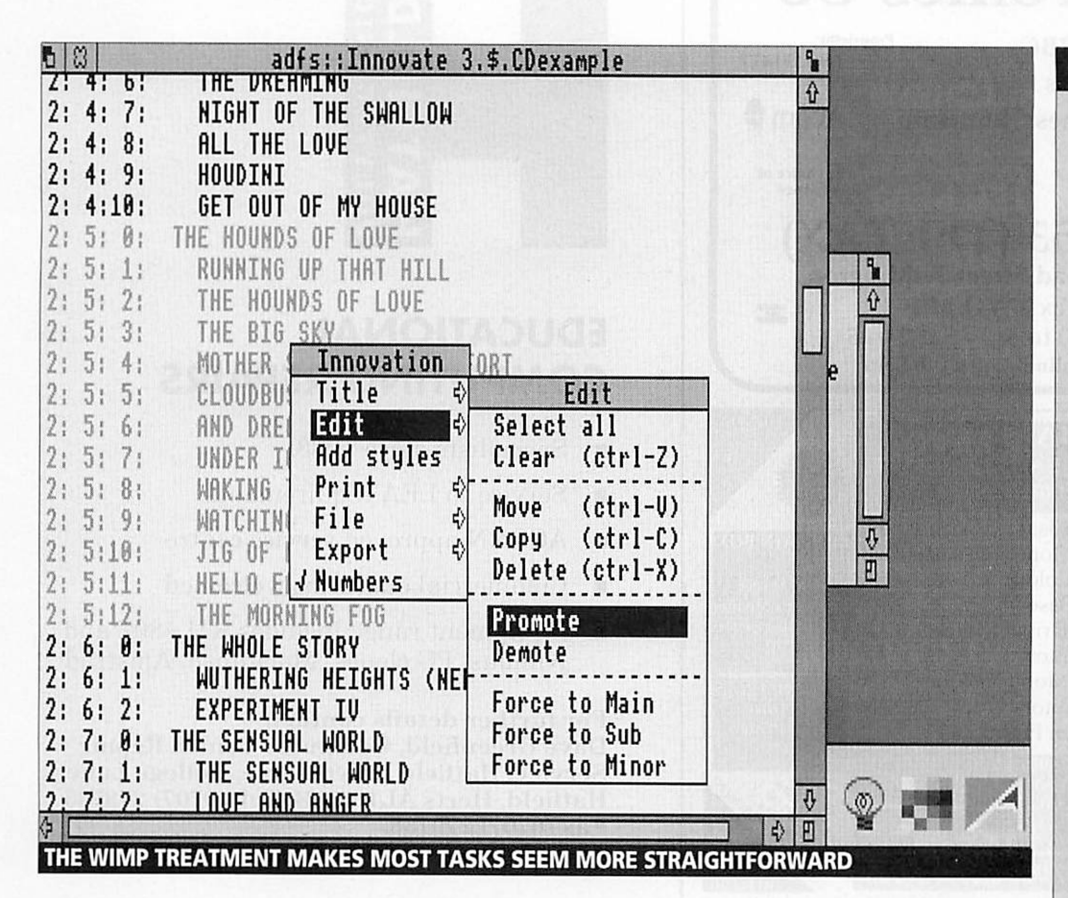
Indeed, some of the most difficult parts – such as drawing windows and reading input from the keyboard and mouse – can be delegated to the Wimp. Also the *FormEd* program, available on Sid or with Acorn Ansi C, can be used to design windows with the sort of ease you would expect from an art program like *Paint*. This article should give some much-needed guidance to programmers who wish to start programming for Risc OS windows.

Last month, I introduced the *Innovation* ideas processor. *Innovation* is referred to as an editor – that is, a program which can be used to load, alter and save a file. With all editors, one of the most important parts of the design is how to create file formats.

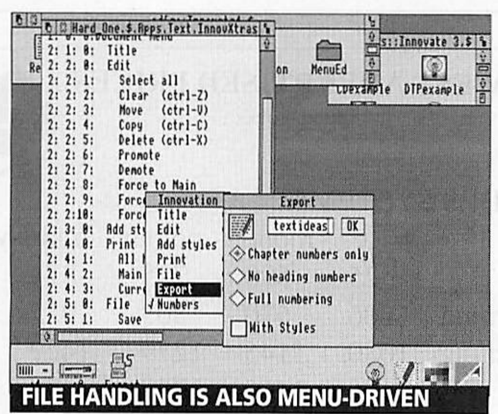
If you are making a file format from scratch, it is important to get it right first time. Changing it later could be difficult – especially if you have saved several files to disc. Using a compiled language like C allows you to make use of structured types or records to make file manipulation simpler. This also makes it far easier to change the format of a file. Bearing these points in mind, this is how I started to create the *Innovation* ideas processor.

Most file formats start with a header, giving global information on the file. In *Innovation* this consists of the number of ideas in the file, followed by the title and the heading styles. After the header come several data items, the ideas themselves, along with their heading levels within *Innovation*.

I started writing *Innovation* by creating a very simple Basic program. The save routine from the program was later used as the basis for the finished program's save procedure and the purpose of this program was to create a short file which could be loaded into the multi-tasking ideas processor. In this way, I could write the screen redrawing routines and have something to test them with, as the redraw had to be working correctly before any of the editing functions could be written.



THE WIMP TREATMENT MAKES MOST TASKS SEEM MORE STRAIGHTFORWARD



FILE HANDLING IS ALSO MENU-DRIVEN

In writing the editing functions I had to choose whether to write my own functions, or to take advantage of writeable icons, leaving the bulk of the work to the Wimp. In the end I decided against the former option. One disadvantage is that large scale editing, (group copying and deleting), would be made more difficult by using writeable icons because the indirection fields of many icons would need to be changed. This can't be done legally on an open window.

The first editing function that I wrote was the heading level adjustment with the mouse. It is important to try to minimise the amount of the work area that is invalidated by Wimp_ForceRedraw or the application Wimp_UpdateWindow. Redrawing large areas of screen each time a small alteration is made not only slows the program down, but soon becomes irritating for the user.

Innovation uses two functions which update sections of the screen. PROCupdateline(n) redraws the nth idea after a line edit. PROCchapters(n), invalidates the numbers area, beginning at the nth idea, and ending at the end of the file, using Wimp_ForceRedraw. During keyboard input it is particularly important to maintain fast update to avoid distracting the user. PROCupdateline uses Wimp_UpdateWindow to alter the window's contents. This involves writing more code to redraw the line, but it updates the screen immediately, instead of waiting for another call to Wimp_Poll. This makes it well worth using for any sort of interactive input.

Up until this point, I was using templates copied from the *Edit* application, but in order to provide the more specialised functions of the program, I needed to make a set of more appropriate templates. In fact, it was soon after this that I decided to write a companion to *FormEd*, to replace the cumbersome Basic routines I was using to create my menus.

I called it *MenuEd* and when loaded, *MenuEd* sits quietly on the icon bar until a special text file is dropped on to it. The text file contains all the menu definitions, in an easy-to-read, easy-to-alter format. It can be loaded in *Edit* and altered at will, and when it is dropped on to the *MenuEd* icon, *MenuEd* obligingly creates a menu template which can be loaded into your own applications by one short procedure.

The file that *MenuEd* creates is saved in the directory containing the original text file. It is given the filename Menus and the Template file type (&FEC) in order to distinguish it from other files. Despite this, it is not compatible with window template files, so it should not be loaded into *FormEd*, as it will cause an error, or possibly a crash. The box on page 77 shows you, how to create the text files for *MenuEd*, together with the menu file for *Innovation*. *MenuEd* itself can be found in the yellow pages and on the monthly disc, together with Basic assembler and C procedures for loading the menu templates.

LOADING MENUS

The call to loadmenus should be followed by a set of statements to retrieve the menus' addresses from the free memory space. All the menu addresses are provided, using the same order that was used in the definition file. (You need not extract the addresses of sub-menus, which were linked to the menu tree with the 'm' option). The following Basic fragment illustrates how to achieve this:

```
PROCloadmenus("<Application-$Dir>.Menus",free%,1) :
first_menu%=free%!0
main_menu%=free%!4
REM We do not want the third
menu, so skip to the fourth
edit_menu%=free%!12
```

You can now use these variables directly with Wimp_CreateMenu to open menus with a line like the following:

```
SYS "Wimp_CreateMenu"
,,,main_menu%,x%,y%
```

Note the double commas, after the second quote. They are important. The menu addresses can also be used to directly access the menu structure in order to shade or tick items during execution, and to find the addresses of indirected writeable items so that you can read them.

JR Letronics Co

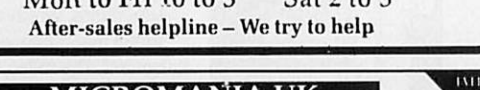
Proprietor: J.H. JARLETT

- Archimedes/A3000/BBC
- Computer Peripherals
- Educational & Business Software
- Documentation
- Discs & Paper

Acorn — The choice of experience

081-977 8053 (TEL/FAX)

The Annexe 2 Broad Street Teddington
Middlesex TW11 8RF



Mon to Fri 10 to 5 Sat 2 to 5

After-sales helpline – We try to help





EDUCATIONAL COMPUTING REPAIRS

- Specialists since 1983
- Service to LEA requirements
- ACORN approved service centre
- Commercial enquiries welcomed
- Equipment range includes RM 480Z and Nimbus, PC clones, Macintosh, Amstrad

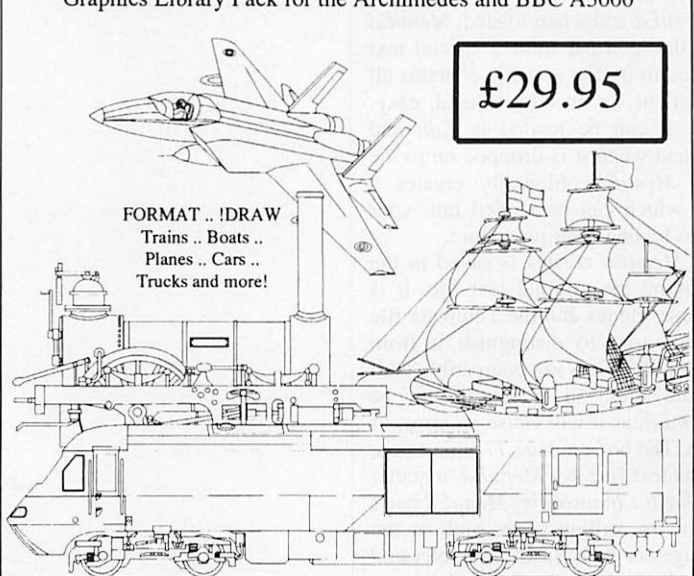
For further details contact:
Dave Greenfield, Computer Centre Repair Service, Hatfield Polytechnic, College Lane, Hatfield, Herts AL10 9AB. Tel. (0707) 279735 Fax (0707) 279738.



MICRO STUDIO 22 Churchgate Street SOHAM Cambs CB7 5DS tel.0353 720433

TRANSPORT

Graphics Library Pack for the Archimedes and BBC A3000



LOWEST ADVERTISED PRICES
limited stocks



ARCHIMEDES SYSTEMS :

	base	mono	colour	multisync
A3000	525	590	725	874
A3000 Learning	606	670	805	955
A420 Learning	1080	1145	1279	1429
A440/1	1100	1165	1299	1449
A540	2369	2434	2567	2717
R140 Unix	1850	1950	2050	2200

PRINTERS :

Swift 9 with colour kit	£149
Star LC20 *NEW MODEL*	£129
Swift 24 with colour kit	£229
Desk Jet 500	£299
Printer cable, universal	£3

LOOK 9 pin dot matrix full functions ONLY £99

Mail order only

carriage :
computer and monitor £8 · comp, mon, printer £10
printer only £6 · next day supplement £5

Education orders welcome
VAT extra to all prices
Access & Visa welcome

MICRO DISCOUNT phone 041 353 1999
205 Buchanan Street, Glasgow, G1 2JZ.

When an attempt is made to drag an icon with Select – a mouse click, with buttons value &10, on that icon is then reported. *Innovation* responds to this by using the two functions Wimp_GetWindowState and Wimp_GetIconState, to find the OS coordinates of the icon, and Wimp_DragBox type 5 to initiate a fixed-size box drag. When this ends, the Wimp sends back the end of drag event to tell the program which window the file was dropped in. Then the save can begin. With the dialogues working correctly, I started to write a proper Save routine.

The next task was to implement the *Edit* menu functions. Most of these call the procedure, PROCselect(p%), which uses a loop to find the selected items. It then applies a function to each of them, according to p% which is taken directly from their position in the menu. This can also be called by a function key, using an appropriate value for p%.

The Add Styles dialogue uses several writeable icons, and it is made friendlier by using the RETURN key to pass the caret around the icons. It is also up to an application to redisplay a menu when a selection is made with adjust. Few things are more irritating than repeatedly tracing through several layers of menus.

The complex functions to deal with printing and Ram transfer needed to be written at this stage. Under Risc OS, the preferred method of printing is to a file. This can be very useful as you can use an environmental variable to direct the output. *Innovation* uses Idea$PrintFile.

Setting this to a filename will print the output to a file, which can save time and paper when you are checking the results. The Ram transfer of files is a great time-saver in Risc OS, but can be difficult to implement. I developed several functions for *Innovation* which provide an interface similar to that of the file commands mentioned earlier. This makes them particularly suitable for transferring converted format files, such as the file export variations.

There are several global variables that need to be set up to 'open' an output file. Firstly, templates% should be set up to point at an area of memory of size sbuf%, where sbuf% is a multiple of four. Larger values of sbuf% obviously use more memory, but achieve slightly faster transfers. This can be done at the beginning of the program. Every time a file is opened base% and dest% should be set to 0. To write a byte to the file use PROCramtransmitbyte(value%), and to transmit a string use PROCramtransmitstring(a$). When you have finished, you can close the file with PROCensuretransmission.

To read a file in this way you must know how long the file will be, *Innovation* finds this out from the file itself. Open the file as before, only this time, set base% to sbuf% and dest% to sbuf%+1. FNramreceivebyte and FNramreceivestring read in the appropriate values. Despite economising on local variables, this routine is fairly slow – so for editors using large files, it is probably better to seek an alternative solution.

Hopefully, by now you will have gained some ideas about how to write applications and you can also get more ideas by studying the code of other Basic programs. Once you have written one application your confidence will grow, even if, sometimes, your motivation doesn't keep pace. If you are really serious about programming for the desktop, then you should consider using Ansi C, which comes complete with a massive library of functions These offer an unparalleled ease of programming.

However you do it, there are some golden rules. It is best to start off with small simple programs – once you get the hang of these, you can start to write larger programs. Don't forget, you can always learn a lot from your fellow programmers. It should help you to create professional, and useful, programs of your own.

CREATING TEXT FILES

The format of a menu creation file is fairly rigid, so it is important to follow these instructions closely. In particular, it is important not to include surplus blank lines, such as untitled menus, as they often have special meanings. If you want to leave lines blank for clarity, put a single hash ('#') at the beginning of the line. This must be the very first character, and it creates a comment line.

It is useful to use these comment lines before each menu, to number them for reference purposes. The first non-comment line in the description file should contain a single decimal number which tells MenuEd how many menus to expect. When counting the number of menus, you should count all non-leaf menus and leaf menus, but not dialogue boxes. It is possible to define a sub-menu which is available from more than one place, such as the background and foreground sub-menus in Edit. If the menu is only defined once, it should only be counted once. On the lines that come after this number, there should be a sequence of exactly that number of menu definitions.

Each menu definition is made up of one line for the menu title, and one line for each of the menu items. Each menu item is followed optionally by flags, used to set menu attributes, and a validation string which is used to censor input to writeable menus. If present, the flags should be placed between curly brackets, and so should the validation string. The final option in a menu should have the 'e' flag set to indicate that it is the end of the menu.

The following flags are defined:

- c<fgd col>Set text colour
- b<bckgd col>Set background colour
- m<menu no.> Link sub-menu to entry
- w<window identifier> Link dialogue box to entry
- tTick this item
- lLine follows
- sShade out this item
- eEnd of menu
- i<input width>[,<buffer length>]] Input item
- pPicture (sPrite)

A window identifier is an arbitrary value. Your program should replace it with the address of a menu created at run-time, such as a font menu, or the window handle of a dialogue box. It can do this by capturing Wimp message &400C0 (the pointer passing over sub-menu arrow), and using a call like

```
SYS "Wimp_CreateSubMenu"
,,FNdialogue(q%!20),q%!24,q%!28
```

where FNdialogue is the function to convert the arbitrary handle into a meaningful one. Look at Innovation to see how this is done.

A menu number n, represents the nth menu in the file. It is used with the m flag to create a sub-menu using a menu from the creation file. The i flag is followed by two numerical parameters. The first sets the width of the menu, determining how many characters of input can be seen at any one time. If this is less than the total length of the input string, then the second parameter should be given. This indicates the maximum number of characters allowed, not including the terminating character. No extra workspace need be allocated for writeable entries.

The menu file that is created is no use until your application is provided with the loading function. I have provided Arm assembler, Basic and C versions of the loadmenus procedure. The Basic loadmenus procedure may be INSTALLed, loaded as a LIBRARY or an OVERLAY, or it can be APPENDed to the program – it's up to you. Before you call it, you should set up a variable to point to a free area of memory, that is at least four times the number of menus long in bytes.

This variable is used to return the addresses of the menus and as soon as that is done, you can use that memory area for other purposes, such as polling the Wimp. The procedure takes three parameters, the filename, the pointer to the free memory and a pointer to the sprite area. If you are not using sprite menus, or if your sprites are in the system sprite pool, you should set the last parameter to 1.

Chess 3D

(requires RISC-OS and 1Mb memory)



"QUALITY ARCHIMEDES SOFTWARE FROM MICRO POWER – the Publishing House that brought you over 70 superb programs for the BBC Micro and over 40 for the Acorn Electron".


The Display. Single-screen presentation with superb 3D graphics, using shading and vanishing point perspective. Board rotation at any point in the game and additional icon-type board for quick moves. Moves and responses are listed in a window allowing review of the game so far.


Options include player v computer, player v player and even computer v computer. A book of standard openings is available, to which you may add if you wish. Learners can cheat by taking back moves or even reversing sides with the computer. A part game can be set up to aid analysis of particular problems.


The program is fully integrated with RISC-OS multi-tasking and windowing system. For instance, you can close down the main window after moving, work on some other application, and then return to find your chess game has been progressed.


As you would expect all moves are validated and the program accommodates Castling, 'En Passant' and all-piece promotion. Full advantage has been taken of the speed of the Archimedes.

TRIAL OFFER

Cut-down version of program (player v player only) available at £2.95 to enable you to experience the graphics. This is completely refundable against purchase of the full game.

AUTHORS

If you have written or are writing Archimedes software of commercial standard and are seeking a Publisher please write to Bob Simpson at the address given, preferably with a working sample of your program.

Cheques/P.O's payable to MICROPOWER





Micro Power Ltd. Northwood House, North Street, Leeds LS7 2AA Tel. 0532 458800

Price £19.95

Please add 0.95p for postage & packing.

Your First Diary Date For 1992

JAN 22

JAN 23

JAN 24

JAN 25

● Widely recognised as Britain's most comprehensive educational IT event, BETT '92 brings together over 220 companies showing the latest in education technology. See, try out, test and compare all that's currently available before deciding what to buy.

● BETT '92 covers every branch of technology for all levels of education and you don't have to be a technology specialist to benefit – practical information and advice will be on hand at the show.

● An extensive free seminar programme organised by subject associations and the major education bodies will focus on all the major issues within technology in education. Discover the implications of IT for your chosen field and keep one step ahead.

Don't miss the **Software Centre**, **Acorn Village**, **Publishing Village**, **Special Needs Area**

Organised by Emap International Exhibitions and sponsored by BBC Educational Computing and Technology Magazine and the BEEA, put **BETT '92** in your diary now.

The show is ideal as an INSET visit.

For your complimentary tickets and further details, return the coupon or call 071-404 4844. **NO ADMITTANCE TO UNDER 18s.**

BETT '92

TECHNOLOGY IN EDUCATION

JANUARY 22-25 BARBICAN LONDON

FREE TICKETS 071-404 4844

☐ Please send me .... complimentary tickets — BETT '92

☐ Please send me seminar details

Name ....

Job Title ....

Establishment ....

Address ....

Postcode .... Tel ....

AU 1

Please return to: BETT '92, EMAP International Exhibitions
12 Bedford Row, London WC1R 4DU

Overseas Subscriptions
Magazine only:

Europe	£35.00 ❑
Rest of World	£45.00 ❑

With Disc:

	5.25in	3.5in
Europe	£44.00 ❑	£49.00 ❑
Rest of World	£64.00 ❑	£69.00 ❑

For overseas orders please add £1 (Europe), and £3 (rest of the world) to cover mailing costs

❑ I enclose a Cheque/PO to **Redwood Publishing Ltd**

❑ I wish to pay by Access/Visa

Card number...

Expiry Date...............................

Signature...

Back Orders

Please fill in date (Back to March 1990)

Month....................................Year - 90 ❑ 91 ❑

❑ Magazine £1.95 ❑
❑ Disc £4.95 (5.25in) ❑ £5.95 (3.5in) ❑

Please tick all the relevant boxes and return this entire page to *BAU Mail Order*, PO Box 66, Wetherby LS23 7HL

Name...

Address...

....

....



Program	Page	BBC B B+	B+/ 128	Master 128	Master Compact	Electron	6502SP/ Turbo	ADFS	Econet	Shadow Ram	Archimedes/ A3000	Monthly disc
★Info	49											
Info 1		■	■	■	■	■	■	■	■			■
Info 2		■	■	■	■	■	■	■	■			■
Info 3	Not in the yellow pages, monthly disc only											■
Info 4		■	■	■	■	■	■	■	■	■	■	■
Info 5								■	■		■	■
Info 6		■	■	■	■	■	■	■	■	■	■	■
Info 7								■	■		■	■
Info 8								■	■		■	■
Info 9								■	■		■	■
Info 10		■	■	■	■	■	■	■	■	■	■	■
Info 11								■	■		■	■
Info 12		■	■	■	■	■	■	■	■		■	■
Pieces of Eight	71											
Po81		■	■	■	■	■	■	■	■	■	■	■
Po82		■	■	■	■	■	■	■	■	■	■	■
Po83		■	■	■	■	■	■	■	■	■	■	■
Po84		■	■	■	■	■	■	■	■	■	■	■
Menu Editor	75							■	■		■	■

★Info

Listing 1

```
   10 REM >WWsrc (Info1) - Circuit Autom
aton Source
   20 REM By Andrew Pepperell
   30 REM For B/B+/M/C/E/(!65Host)
   40 REM (C) BAU November 1991
   50 :
   60 IF PAGE<&1900 THEN PAGE=&1900:CHAI
N "WWsrc"
   70 :
   80 MODE 7
   90 PROCassemble
  100 PROCchecksum
  110 OSCLI("SAVE WWcode "+STR$~start+"
"+STR$~P%)
  120 PRINT"Code saved O.K."
  130 END
  140 :
  150 DEF PROCassemble
  160 osbyte=&FFF4
  170 oswrch=&FFEE
  180 osrdch=&FFE0
  190 current=&1E00
  200 old=&1900
  210 start=&900
  220 scraddr=&A8
  230 addrdata=&AA
  240 neighbours=&70
  250 temp=&AC
  260 row=&AD
  270 column=&AE
  280 byte=&AF
  290 writeto=&71
  300 temp2=&73
  310 xco=&74
  320 yco=&75
  330 PRINT"Assembling..."
  340 FOR pass=0 TO 2 STEP 2:P%=start
  350 [OPT pass
  360 JMP mainloop
  370 .showcircuit
  380 LDA #0
  390 STA row
  400 .displayrow
  410 LDA row
  420 ASL A
  430 TAX
  440 LDA addrtable,X
  450 STA scraddr
  460 LDA addrtable+1,X
  470 STA scraddr+1
  480 LDA datatable,X
  490 STA addrdata
  500 LDA datatable+1,X
  510 CLC
  520 ADC #5
  530 STA addrdata+1
  540 LDA #0
  550 STA column
  560 :
  570 .displayfour
  580 LDY column
  590 LDA (addrdata),Y
  600 PHA
  610 LSR A:LSR A
  620 LSR A:LSR A
  630 AND #12
  640 TAX
  650 LDY #0
  660 JSR plot
  670 PLA
  680 PHA
  690 LSR A:LSR A
  700 AND #12
  710 TAX
  720 LDY #8
  730 JSR plot
  740 PLA
  750 PHA
  760 AND #12
  770 TAX
  780 LDY #16
  790 JSR plot
  800 PLA
  810 AND #3
  820 ASL A:ASL A
  830 TAX
  840 LDY #24
  850 JSR plot
  860 LDA scraddr
  870 CLC
  880 ADC #32
  890 STA scraddr
  900 BCC dispnextfour
  910 INC scraddr+1
  920 :
  930 .dispnextfour
  940 INC column
  950 LDA column
  960 CMP #20
  970 BNE displayfour
  980 INC row
  990 LDA row
 1000 CMP #64
 1010 BNE displayrow
 1020 RTS
 1030 :
 1040 .plot
 1050 LDA graphics,X
 1060 STA (scraddr),Y
 1070 INY
 1080 LDA graphics+1,X
 1090 STA (scraddr),Y
 1100 INY
 1110 LDA graphics+2,X
 1120 STA (scraddr),Y
 1130 INY
 1140 LDA graphics+3,X
 1150 STA (scraddr),Y
 1160 RTS
 1170 :
 1180 .mainloop
 1190 JSR showcircuit
 1200 LDA #current MOD 256
 1210 STA scraddr
 1220 LDA #current DIV 256
 1230 STA scraddr+1
 1240 LDA #old MOD 256
 1250 STA addrdata
 1260 LDA #old DIV 256
 1270 STA addrdata+1
 1280 LDX #0
 1290 LDY #0
 1300 :
 1310 .copyloop
 1320 LDA (scraddr),Y
 1330 STA (addrdata),Y
 1340 INY
 1350 BNE copyloop
 1360 INC scraddr+1
 1370 INC addrdata+1
 1380 INX
 1390 CPX #5
 1400 BNE copyloop
 1410 LDA #0
 1420 STA row
 1430 :
 1440 .rowloop
 1450 ASL A
 1460 TAX
 1470 LDA datatable,X
 1480 STA addrdata
 1490 LDA datatable+1,X
 1500 STA addrdata+1
 1510 LDY #0
 1520 STY column
 1530 JMP columnloop
 1540 :
 1550 .nextcolumn
 1560 JMP storenewvalue
 1570 :
 1580 .columnloop
 1590 LDA #0
 1600 STA byte
 1610 LDA column
 1620 LSR A:LSR A
 1630 TAY
 1640 LDA (addrdata),Y
 1650 BEQ nextcolumn
 1660 LDY column
 1670 JSR what
 1680 CMP #0
 1690 BEQ store1
 1700 CMP #1
 1710 BEQ wire1
 1720 SEC
 1730 SBC #1
 1740 JMP store1
 1750 :
 1760 .wire1
 1770 JSR count
 1780 LDA neighbours
 1790 BEQ isawire
 1800 CMP #3
 1810 BCS isawire
 1820 LDA #3
 1830 JMP store1
 1840 :
 1850 .isawire
 1860 LDA #1
 1870 :
 1880 .store1
 1890 ASL A:ASL A
 1900 ASL A:ASL A
 1910 ASL A:ASL A
 1920 STA byte
 1930 INC column
 1940 LDY column
 1950 JSR what
 1960 CMP #0
 1970 BEQ store2
 1980 CMP #1
 1990 BEQ wire2
 2000 SEC
 2010 SBC #1
 2020 JMP store2
 2030 :
 2040 .wire2
 2050 JSR count
 2060 LDA neighbours
 2070 BEQ isawire2
 2080 CMP #3
 2090 BCS isawire2
 2100 LDA #3
 2110 JMP store2
 2120 :
 2130 .isawire2
 2140 LDA #1
 2150 .store2
 2160 ASL A:ASL A
 2170 ASL A:ASL A
 2180 CLC
 2190 ADC byte
 2200 STA byte
 2210 INC column
 2220 LDY column
 2230 JSR what
 2240 CMP #0
 2250 BEQ store3
 2260 CMP #1
 2270 BEQ wire3
 2280 SEC
 2290 SBC #1
 2300 JMP store3
 2310 :
 2320 .wire3
 2330 JSR count
 2340 LDA neighbours
 2350 BEQ isawire3
 2360 CMP #3
 2370 BCS isawire3
 2380 LDA #3
 2390 JMP store3
 2400 :
 2410 .isawire3
 2420 LDA #1
 2430 .store3
 2440 ASL A:ASL A
 2450 CLC
 2460 ADC byte
 2470 STA byte
 2480 INC column
 2490 LDY column
 2500 JSR what
 2510 CMP #0
 2520 BEQ store4
 2530 CMP #1
 2540 BEQ wire4
 2550 SEC
 2560 SBC #1
 2570 JMP store4
 2580 :
 2590 .wire4
 2600 JSR count
 2610 LDA neighbours
 2620 BEQ isawire4
```

►




```
2630 CMP #3
2640 BCS isawire4
2650 LDA #3
2660 JMP store4
2670 :
2680 .isawire4
2690 LDA #1
2700 .store4
2710 CLC
2720 ADC byte
2730 STA byte
2740 .storenewvalue
2750 LDA row
2760 ASL A
2770 TAX
2780 LDA datatable,X
2790 STA writeto
2800 LDA datatable+1,X
2810 ADC #5
2820 STA writeto+1
2830 LDA column
2840 LSR A:LSR A
2850 TAY
2860 LDA byte
2870 STA (writeto),Y
2880 INC column
2890 LDA column
2900 CMP #80
2910 BEQ nextrow
2920 JMP columnloop
2930 :
2940 .nextrow
2950 INC row
2960 LDA row
2970 CMP #64
2980 BEQ keyboard
2990 JMP rowloop
3000 :
3010 .keyboard
3020 LDA #129
3030 LDX #256-113
3040 LDY #255
3050 JSR osbyte
3060 BCS exit
3070 JMP mainloop
3080 .exit
3090 LDY #0
3100 :
3110 .copytoold
3120 LDA old,Y
3130 STA current,Y
3140 LDA old+&100,Y
3150 STA current+&100,Y
3160 LDA old+&200,Y
3170 STA current+&200,Y
3180 LDA old+&300,Y
3190 STA current+&300,Y
3200 LDA old+&400,Y
3210 STA current+&400,Y
3220 DEY
3230 BNE copytoold
3240 RTS
3250 :
3260 .what
3270 STY temp
3280 TYA:TAX
3290 LSR A:LSR A
3300 TAY
3310 LDA (addrdata),Y
3320 PHA
3330 TXA
3340 AND #3
3350 STA temp2
3360 LDA #3
3370 SEC
3380 SBC temp2
3390 TAX
3400 PLA
3410 CPX #0
3420 BEQ and3
3430 .div4
3440 LSR A:LSR A
3450 DEX
3460 BNE div4
3470 :
3480 .and3
3490 AND #3
3500 LDY temp
3510 RTS
3520 .count
3530 LDA addrdata
3540 PHA
3550 LDA addrdata+1
3560 PHA
3570 LDA #0
3580 STA neighbours
3590 CPY #0
3600 BEQ right
3610 DEY
3620 JSR what
3630 INY
3640 CMP #3
3650 BNE right
3660 INC neighbours
3670 :
3680 .right
3690 CPY #79
3700 BEQ upleft
3710 INY
3720 JSR what
3730 DEY
3740 CMP #3
3750 BNE upleft
3760 INC neighbours
3770 :
3780 .upleft
3790 LDA addrdata
3800 SEC
3810 SBC #20
3820 STA addrdata
3830 BCS skip2
3840 DEC addrdata+1
3850 :
3860 .skip2
3870 LDA row
3880 BEQ downleft
3890 CPY #0
3900 BEQ up
3910 DEY
3920 JSR what
3930 INY
3940 CMP #3
3950 BNE up
3960 INC neighbours
3970 :
3980 .up
3990 JSR what
4000 CMP #3
4010 BNE upright
4020 INC neighbours
4030 :
4040 .upright
4050 CPY #79
4060 BEQ downleft
4070 INY
4080 JSR what
4090 DEY
4100 CMP #3
4110 BNE downleft
4120 INC neighbours
4130 :
4140 .downleft
4150 LDA row
4160 CMP #63
4170 BEQ exitcount
4180 LDA addrdata
4190 CLC
4200 ADC #40
4210 STA addrdata
4220 BCC skip1
4230 INC addrdata+1
4240 :
4250 .skip1
4260 CPY #0
4270 BEQ down
4280 DEY
4290 JSR what
4300 INY
4310 CMP #3
4320 BNE down
4330 INC neighbours
4340 :
4350 .down
4360 JSR what
4370 CMP #3
4380 BNE downright
4390 INC neighbours
4400 :
4410 .downright
4420 CPY #79
4430 BEQ exitcount
4440 INY
4450 JSR what
4460 DEY
4470 CMP #3
4480 BNE exitcount
4490 INC neighbours
4500 :
4510 .exitcount
4520 PLA
4530 STA addrdata+1
4540 PLA
4550 STA addrdata
4560 LDA neighbours
4570 RTS
4580 :
4590 .graphics
4600 EQUD &00000000
4610 EQUD &000E0E0E
4620 EQUD &00E0E0E0
4630 EQUD &00EEEEEE
4640 :
4650 .addrtable
4660 ]
4670 FOR loop=0 TO 31
4680 [OPT pass
4690 EQUW &3000+loop*640
4700 EQUW &3000+loop*640+4
4710 ]
4720 NEXT
4730 datatable=P%
4740 FOR loop=0 TO 63
4750 [OPT pass
4760 EQUW old+loop*20
4770 ]
4780 NEXT
4790 NEXT
4800 ENDPROC
4810 :
4820 DEF PROCchecksum
4830 PRINT"Checking..."
4840 I%=0
4850 FOR M%=start TO P%-1
4860 I%=I%+?M%
4870 NEXT
4880 IF I%=99899 THEN ENDPROC
4890 VDU 7
4900 PRINT "Checksum error"
4910 END
```

Listing 2

```
10 REM >WWorld8 (Info 2) - Circuit Automaton
20 REM By Andrew Pepperell
30 REM For B/B+/M/C/E
40 REM (C) BAU November 1991
50 :
60 IF PAGE<>&2300 THEN PAGE=&2300:CHAIN "WWorld8"
70 :
80 MODE 1
90 PROCc(0)
100 PROCinit
110 PROCmenu
120 MODE 7
130 END
140 :
150 DEF PROCinit
160 *FX 4,1
170 *FX 229,1
180 *Load WWcode 900
190 VDU 23,254,224,224,224,0,0,0,0,0
200 VDU 23,255,192,240,124,112,40,36,2,1
210 VDU 19,1,4;0;
220 VDU 19,2,2;0;
230 VDU 19,3,1;0;
240 c%=&1E00:o%=c%-&500
250 x=0:y=0
260 ee$=CHR$27+CHR$27
270 ENDPROC
280 :
290 DEF PROCc(s)
300 VDU 23;10,95+s;0;0;0;
310 ENDPROC
320 :
330 DEF PROCmenu
340 held=FALSE
350 REPEAT
360 COLOUR 3:COLOUR 129:PRINTTAB(0,0);" WireWorld ";
370 COLOUR 128:PRINT" ";FNw("Edit");FNw("Load");FNw("Save");FNw("Go");
380 IF held REPEATUNTILNOTINKEY-113:held=FALSE:*FX15
390 key=INSTR(" EeLlSsGg"+ee$,GET$)DIV 2
400 IF key=1 PROCdesign
410 IF key=2 PROCload
420 IF key=3 PROCsave
430 IF key=4 CALL&900:held=TRUE
440 UNTIL key=5
450 ENDPROC
460 :
470 DEF FNw(a$)
480 COLOUR 129:VDU 32
490 COLOUR 3:PRINTLEFT$(a$,1);
500 COLOUR 2:PRINTMID$(a$,2);" ";
510 COLOUR 128
520 =" "
530 :
540 DEF PROCdesign
550 CALL &903
560 REPEAT
570 PROCcursor
580 A%=INSTR(" ZzXx/?:*RrWwBb"+ee$,GET$)DIV2
590 shift=INKEY-1
600 PROCcursor
610 IF shift g=8 ELSE g=1
620 IF A%=1 x=x-g:IF x<0 x=0
630 IF A%=2 x=x+g:IF x>79 x=79
640 IF A%=3 y=y+g:IF y>63 y=63
650 IF A%=4 y=y-g:IF y<0 y=0
660 IF A%=5 AND shift PROCremove
670 IF A%=6 AND shift PROCclear(&55)
680 IF A%=7 AND shift PROCclear(0)
690 IF INKEY(-90) PROCalter(0)
700 IF INKEY(-74) PROCalter(1)
710 IF INKEY(-36) PROCalter(2)
720 IF INKEY(-85) PROCalter(3)
730 UNTIL A%=8
740 ENDPROC
750 :
760 DEF PROCalter(a)
770 byte=c%+y*20+x DIV 4
780 pos=3-(x AND 3)
790 ?byte=?byte AND 255-(2^(2*pos)+2^(2*pos+1))
800 ?byte=?byte+a*(2^(2*pos))
810 GCOL 0,a
820 MOVE x*16,(64-y)*16-4
830 VDU 5,254,4
840 ENDPROC
850 :
860 DEF PROCcursor
870 MOVE x*16+4,(63-y)*16+8
880 VDU 5,18,4,0,255,4
890 ENDPROC
900 :
910 DEF PROCclear(byte)
920 word=byte OR byte*256 OR byte*256*256 OR byte*256*256*256
930 FOR loop=0 TO &4FC STEP 4
940 c%!loop=word
950 NEXT
960 IF word>0 CALL &903 ELSE VDU 26,12
970 ENDPROC
980 :
990 DEF PROCremove
1000 FOR loop=0 TO &4FF
1010 b%=c%?loop
1020 c%?loop=(b% AND &55) OR (b% AND &AA) DIV 2
1030 IF loop MOD 128=0 PRINTTAB(0,0);"Removing ";9-(loop DIV 128)
1040 NEXT
1050 CALL &903
1060 ENDPROC
1070 :
1080 DEF PROCload
1090 fname$=FNfile
1100 IF fname$="" ENDPROC
1110 OSCLI("LOAD "+fname$+" "+STR$~c%)
1120 CALL &903
1130 ENDPROC
1140 :
1150 DEF PROCsave
1160 fname$=FNfile
1170 IF fname$="" ENDPROC
1180 OSCLI("SAVE "+fname$+" "+STR$~c%+" +500")
1190 ENDPROC
1200 :
1210 DEF FNfile
1220 COLOUR3
1230 PRINTCHR$30;SPC40;CHR$30;" Filename:";
1240 PROCc(1)
1250 COLOUR 2
1260 INPUT""file$
1270 PROCc(0)
1280 =file$
```

Listing 4

```
10 REM >Surface (Info 4)
20 REM By Paul McKenzie
30 REM For BBC B/B+/M/C/E/(A!)
40 REM (C) BAU November 1991
50 :
60 MODE 2
70 PROCinit
80 PROCdraw
90 END
100 :
110 DEF PROCinit
120 VDU 29,640;512;
130 VDU 23;10,32;0;0;0;
140 FOR col=1 TO 7
150 READ new
160 VDU 19,col,new;0;
170 NEXT
180 step=8
190 angle=30
200 CA=COSRAD(angle)
210 SA=SINRAD(angle)
220 ENDPROC
230 :
240 DATA 4,1,5,6,3,7,2
250 :
260 DEF PROCdraw
270 GCOL 0,7
280 PROCplot(4,-500,-200,-500)
290 PROCplot(4,-500,-200,500)
300 PROCplot(85,500,-200,-500)
310 PROCplot(85,500,-200,500)
320 Y1=FNgy(-300,-300)
330 Y3=FNgy(-300+step,-300)
340 FOR X=-300 TO 300 STEP step
350 FOR Z=-300 TO 300 STEP step
360 Y2=FNgy(X,Z+step)
370 Y4=FNgy(X+step,Z+step)
380 G=((Y1-Y4)/step)+3
390 IF G<0 G=0
400 IF G>6 G=6
410 GCOL 0,G
420 PROCplot(4,X,Y2,Z+step)
430 PROCplot(4,X,Y1,Z)
440 PROCplot(85,X+step,Y4,Z+step)
450 PROCplot(85,X+step,Y3,Z)
460 GCOL 0,1
470 PROCplot(4,X-100,Y2-300,Z-100+step)
480 PROCplot(4,X-100,Y1-300,Z-100)
490 PROCplot(85,X-100+step,Y4-300,Z-100+step)
500 PROCplot(85,X-100+step,Y3-300,Z-100)
510 Y1=Y2
520 Y3=Y4
530 NEXT
540 NEXT
550 ENDPROC
560 :
570 DEF PROCplot(K%,X%,Y%,Z%)
580 x%=CA*X%-SA*Z%
590 z%=SA*X%+CA*Z%
600 Z%=z%
610 y%=CA*Y%-SA*Z%
620 z%=SA*Y%+CA*Z%
630 M=-2000/(z%-2000)
640 PLOT K%,x%*M,y%*M
650 ENDPROC
660 :
670 DEF FNgy(X,Z)
680 x=X/50
690 z=Z/50
700 =COS(2.5*SQR(x*x+z*z))*50
```

Listing 5

```
10 REM >LASrc (Info 5)
```

```
20 REM ListAid module source
30 REM by Dave Acton
40 REM for Archimedes only
50 REM (c) BAU November 1991
60 :
70 DIM code 4000
80 :
90 wp      =12
100 sp     =13
110 link   =14
120 pc     =15
130 :
140 alloc  =0
150 balance =FNalloc(1)
160 columns =FNalloc(1)
170 eject  =FNalloc(1)
180 gutter =FNalloc(1)
190 length =FNalloc(1)
200 size   =FNalloc(1)
210 width  =FNalloc(1)
220 tmarg  =FNalloc(1)
230 hmarg  =FNalloc(1)
240 fmarg  =FNalloc(1)
250 bmarg  =FNalloc(1)
260 lmarg  =FNalloc(1)
270 lengths =FNalloc(3)
280 pageno =FNalloc(1)
290 last   =FNalloc(1)
300 alloc  =(alloc+3) AND (NOT 3)
310 work   =FNalloc(256)
320 command =FNalloc(256)
330 headers =alloc
340 setup  =FNalloc(256)
350 header =FNalloc(256)
360 footer =FNalloc(256)
370 alloc  =(alloc+15) AND (NOT 15)
380 :
390 pars   =12
400 true   =255
410 false  =254
420 claim  =6
430 release =7
440 vbit   =1<<28
450 crlf$  =CHR$10+CHR$13
460 syntax$ =CHR$27+CHR$1+" "
470 :
480 FOR pass=4 TO 6 STEP 2
490 P%=0
500 O%=code
510 [OPT pass
520 .listaid
530         EQUD    0
540         EQUD    init
550         EQUD    quit
560         EQUD    0
570         EQUD    la_title
580         EQUD    la_help
590         EQUD    la_commands
600         EQUD    0
610         EQUD    0
620         EQUD    0
630         EQUD    0
640
650 .la_title
660         FNtext("ListAid")
670
680 .la_help
690         EQUS    "ListAid"
700         EQUB    9
710         EQUB    9
720         EQUS    "1.00"
730         EQUS    " ("+MID$(TIME$,5,
11)+")"
740         EQUB    0
750         ALIGN
760
770 .init   STMFD   (sp)!,{link}
780         MOV     r0,#claim
790         MOV     r3,#alloc
800         SWI     "XOS_Module"
810         ADRVS   r0,no_room
820         LDMVSFD (sp)!,{pc}
830         STR     r2,[wp]
840         ADR     r3,start_values
850         LDMIA   (3),{r4-r7}
860         STMIA   (2),{r4-r7}
870         LDMFD   (sp)!,{pc}
880
890 .start_values
900         EQUB    255
910         EQUB    3
920         EQUB    255
930         EQUB    3
940         EQUB    64
950         EQUB    (80-6) DIV 3
960         EQUB    80
970         EQUB    2
980         EQUB    2
990         EQUB    2
1000        EQUB    2
1010        EQUB    0
1020        EQUB    0
1030        EQUB    0
1040        EQUB    0
1050        EQUB    0
1060        ALIGN
1070
1080 .minima
1090        EQUB    254
1100        EQUB    1
1110        EQUB    254
1120        EQUB    0
1130        EQUB    1
1140        EQUB    1
1150        EQUB    1
1160        EQUB    0
1170        EQUB    0
1180        EQUB    0
1190        EQUB    0
1200        EQUB    0
1210        ALIGN
1220 .maxima
1230        EQUB    255
1240        EQUB    8
1250        EQUB    255
1260        EQUB    20
1270        EQUB    253
1280        EQUB    253
1290        EQUB    253
1300        EQUB    253
1310        EQUB    253
1320        EQUB    253
1330        EQUB    253
1340        EQUB    253
1350        ALIGN
1360
1370 .quit  STMFD   (sp)!,{link}
1380        MOV     r0,#release
1390        LDR     r2,[wp]
1400        SWI     "XOS_Module"
1410        LDMFD   (sp)!,{pc}
1420
1430 .ListPars
1440        STMFD   (sp)!,{r1-r11,link
}
1450        BL      init_com
1460        ADR     r5,par_list
1470        MOV     r3,wp
1480 .list_par_loop
1490        MOV     r4,#0
1500 .list_par_loop2
1510        LDRB    r0,[r5],#1
1520        CMP     r0,#ASC"/"
1530        BEQ     done_par_name
1540        SWI     "XOS_WriteC"
1550        ADD     r4,r4,#1
1560        B       list_par_loop2
1570 .done_par_name
1580        RSB     r0,r4,#16
1590        BL      several
1600        LDRB    r0,[r3],#1
1610        BL      evaluate
1620        SWI     "XOS_Write0"
1630        SWI     "XOS_NewLine"
1640 .skip_par_nameloop
1650        LDRB    r0,[r5],#1
1660        CMP     r0,#ASC","
1670        BEQ     list_par_loop
1680        CMP     r0,#0
1690        BNE     skip_par_nameloop
1700        MOV     r6,#0
1710        ADR     r7,string_names
1720        ADD     r8,wp,#lengths
1730 .show_string_loop
1740        MOV     r0,r7
1750        MOV     r1,#9
1760        SWI     "XOS_WriteN"
1770        ADD     r5,wp,#headers
1780        ADD     r5,r5,r6,ASL #8
1790        ADD     r7,r7,#9
1800        LDRB    r4,[r8],#1
1810 .show_string
1820        SUBS    r4,r4,#1
1830        BMI     shown_string
1840        LDRB    r0,[r5],#1
1850        CMP     r0,#32
1860        BLT     control
1870        CMP     r0,#127
1880        BGE     control
1890        SWI     "XOS_WriteC"
1900        B       show_string
1910 .control
1920        SWI     &20100+ASC"["
1930        ADD     r1,wp,#work
1940        MOV     r2,#256
1950        SWI     "XOS_ConvertCardin
al1"
1960        SWI     "XOS_Write0"
1970        SWI     &20100+ASC"]"
1980        B       show_string
1990 .shown_string
2000        SWI     "XOS_NewLine"
2010        ADD     r6,r6,#1
2020        CMP     r6,#3
2030        BLT     show_string_loop
2040        LDMFD   (sp)!,{r1-r11,pc}
2050
2060 .evaluate
2070        STMFD   (sp)!,{r1,link}
2080        CMP     r0,#254
2090        ADREQ   r0,no
2100        ADRGT   r0,yes
2110        LDMGEFD (sp)!,{r1,pc}
2120        ADD     r1,wp,#work
2130        MOV     r2,#32
2140        SWI     "XOS_ConvertCardin
al1"
2150        LDMFD   (sp)!,{r1,pc}
2160
2170 .show_par_val
2180 .yes   FNtext("Y")
2190 .no    FNtext("N")
2200
2210 .string_names
2220        EQUS    "Setup  : "
2230        EQUS    "Header : "
2240        EQUS    "Footer : "
2250        ALIGN
2260
2270 .no_room
2280        EQUD    0
2290        FNtext("No room in RMA")
2300
2310 .ListSet
2320        CMP     r1,#0
2330        MOVEQ   pc,link
2340        STMFD   (sp)!,{r1-r11,link
}
2350        BL      init_com
2360        ADR     r0,par_list
2370        ADD     r1,wp,#command
2380        ADD     r2,wp,#work
2390        MOV     r3,#256
2400        SWI     "XOS_ReadArgs"
2410        LDMVSFD (sp)!,{r1-r11,pc}
2420        MOV     r9,#0
2430        ADD     r8,wp,#work
2440 .decode_args
2450        LDR     r7,[r8],#4
2460        CMP     r7,#0
2470        BLE     next_par
2480        LDRB    r0,[r7]
2490        AND     r0,r0,#&DF
2500        CMP     r0,#ASC"Y"
2510        MOVEQ   r2,#255
2520        BEQ     set_value
2530        CMP     r0,#ASC"N"
2540        MOVEQ   r2,#254
2550        BEQ     set_value
2560        MOV     r0,#10
2570        MOV     r1,r7
2580        SWI     "XOS_ReadUnsigned"
2590        BVS     bad_val
2600 .set_value
2610        ADR     r1,minima
2620        LDRB    r0,[r1,r9]
2630        CMP     r2,r0
2640        BLT     bad_val
2650        ADR     r1,maxima
2660        LDRB    r0,[r1,r9]
2670        CMP     r2,r0
2680        BGT     bad_val
2690        STRB    r2,[wp,r9]
2700        CMP     r9,#1
2710        CMPNE   r9,#3
2720        CMPNE   r9,#6
2730        BNE     dont_set_col_width
2740        LDRB    r3,[wp,#columns]
2750        SUB     r0,r3,#1
2760        LDRB    r1,[wp,#gutter]
2770        MUL     r0,r1,r0
2780        LDRB    r1,[wp,#width]
2790        SUB     r0,r1,r0
2800        MOV     r2,#0
2810 .divide
2820        SUBS    r0,r0,r3
2830        ADDPL   r2,r2,#1
2840        BPL     divide
2850        CMP     r2,#1
2860        MOVLT   r2,#1
2870        STRB    r2,[wp,#size]
2880        B       next_par
2890 .dont_set_col_width
2900        CMP     r9,#5
2910        BNE     next_par
2920        LDRB    r0,[wp,#columns]
2930        LDRB    r1,[wp,#gutter]
2940        ADD     r3,r1,r2
2950        MUL     r3,r0,r3
2960        SUB     r3,r3,r1
2970        STRB    r3,[wp,#width]
2980 .next_par
2990        ADD     r9,r9,#1
3000        CMP     r9,#pars
3010        BNE     decode_args
3020        LDMFD   (sp)!,{r1-r11,pc}
3030 .bad_val
3040        LDMFD   (sp)!,{r1-r11,link
}
3050        ADR     r0,bad_val_err
3060        ORRS    pc,link,#vbit
3070
3080 .bad_val_err
3090        EQUD    0
3100        FNtext("Invalid parameter"
)
3110
3120 .ListSave
3130        STMFD   (sp)!,{r1-r11,link
}
3140        BL      init_com
3150        MOV     r0,#&80
3160        ADD     r1,wp,#command
3170        SWI     "XOS_Find"
3180        LDMVSFD (sp)!,{r1-r11,pc}
3190        MOV     r1,r0
3200        ADR     r2,obey_header
3210        BL      write_line_star
3220        ADR     r5,par_list
3230        MOV     r3,wp
3240 .save_par_loop
3250        ADR     r2,set_command
3260        BL      write_line_star
3270 .save_par_loop2
3280        LDRB    r0,[r5],#1
3290        CMP     r0,#ASC"/"
3300        BEQ     saved_par_name
3310        SWI     "XOS_BPut"
3320        B       save_par_loop2
3330 .saved_par_name
3340        MOV     r0,#32
3350        SWI     "XOS_BPut"
3360        LDRB    r0,[r3],#1
3370        BL      evaluate
3380        MOV     r2,r0
3390        BL      write_line
3400        MOV     r0,#10
3410        SWI     "XOS_BPut"
3420 .find_next_to_save
3430        LDRB    r0,[r5],#1
3440        CMP     r0,#ASC","
3450        BEQ     save_par_loop
3460        CMP     r0,#0
3470        BNE     find_next_to_save
3480        BL      save_headers
3490        MOV     r0,#0
3500        SWI     "XOS_Find"
3510        ADD     r1,wp,#command
3520        MOV     r0,#18
3530        MOV     r2,#&EB
3540        ORR     r2,r2,#&F00
3550        SWI     "XOS_File"
3560        LDMFD   (sp)!,{r1-r11,pc}
3570
3580 .par_list
3590        EQUS    "Balance/k,"
3600        EQUS    "Columns/k,"
3610        EQUS    "Eject/k,"
3620        EQUS    "Gutter/k,"
3630        EQUS    "Length/k,"
3640        EQUS    "ColumnSize/k,"
3650        EQUS    "Width/k,"
3660        EQUS    "TopMargin/k,"
3670        EQUS    "HeaderMargin/k,"
3680        EQUS    "FooterMargin/k,"
3690        EQUS    "BottomMargin/k,"
3700        EQUS    "LeftMargin/k"
3710        EQUB    0
3720        ALIGN
3730
3740 .obey_header
3750        FNtext("RMEnsure ListAid 0
ListAid"+CHR$10)
3760
3770 .set_command
3780        FNtext("ListSet -")
3790
3800 .Listing
3810        STMFD   (sp)!,{r1-r11,link
}
3820        BL      init_com
3830        LDRB    r0,[wp,#columns]
3840        LDRB    r1,[wp,#length]
3850        MUL     r8,r0,r1
3860        LDRB    r0,[wp,#size]
3870        MUL     r3,r0,r8
3880        MOV     r0,#claim
3890        SWI     "XOS_Module"
3900        ADRVS   r0,no_room
3910        LDMVSFD (sp)!,{r1-r11,pc}
3920        MOV     r11,r2
3930        MOV     r9,#0
3940        MOV     r10,#0
3950        MOV     r7,r11
3960        STRB    r9,[wp,#last]
3970        MOV     r0,#1
3980        STRB    r0,[wp,#pageno]
3990        MOV     r0,#&40
4000        ADD     r1,wp,#command
4010        SWI     "XOS_Find"
4020        BVS     list_err
4030        CMP     r0,#0
4040        ADREQ   r0,no_such_file
4050        BEQ     list_err
4060        STMFD   (sp)!,{r0}
4070        ADD     r0,wp,#setup
4080        LDRB    r1,[wp,#lengths]
4090        SWI     "XOS_WriteN"
4100        LDMFD   (sp)!,{r1}
4110 .list_loop
4120        SWI     "XOS_ReadEscapeSta
te"
4130        ADRCS   r0,esc_err
4140        BCS     list_err
4150        SWI     "XOS_BGet"
4160        BVS     list_err
4170        BCS     listed
4180        BL      write_char
4190        B       list_loop
4200 .listed
4210        CMP     r9,#0
4220        MOVNE   r0,#13
4230        BLNE    write_char
4240        BL      show_page
4250        MOV     r0,#0
4260        SWI     "XOS_Find"
4270        MOV     r0,#release
4280        MOV     r2,r11
4290        SWI     "XOS_Module"
4300        LDMFD   (sp)!,{r1-r11,pc}
4310 .list_err
4320        STMFD   (sp)!,{r0}
4330        MOV     r0,#0
4340        SWI     "XOS_Find"
4350        MOV     r0,#release
4360        MOV     r2,r11
4370        SWI     "XOS_Module"
4380        LDMFD   (sp)!,{r0,r1-r11,l
ink}
4390        ORRS    pc,link,#vbit
4400
4410 .esc_err
4420        EQUD    17
4430        FNtext("Escape")
4440
4450 .write_char
```

```
4460          CMP     r0,#32
4470          BGE     normal_char
4480          CMP     r0,#10
4490          CMPNE   r0,#13
4500          MOVNE   pc,link
4510          LDRB    r2,[wp,#last]
4520          CMP     r2,#10
4530          CMPNE   r2,#13
4540          BNE     wasnt_cr_or_lf
4550          CMP     r2,r0
4560          MOVNE   pc,link
4570 .wasnt_cr_or_lf
4580          STRB    r0,[wp,#last]
4590          MOV     r0,#32
4600          LDRB    r2,[wp,#size]
4610 .pad_line
4620          STRB    r0,[r7],#1
4630          ADD     r9,r9,#1
4640          CMP     r9,r2
4650          BNE     pad_line
4660          B       newline
4670 .normal_char
4680          STRB    r0,[r7],#1
4690          STRB    r0,[wp,#last]
4700          ADD     r9,r9,#1
4710          LDRB    r0,[wp,#size]
4720          CMP     r9,r0
4730          MOVLT   pc,link
4740 .newline
4750          MOV     r9,#0
4760          ADD     r10,r10,#1
4770          CMP     r10,r8
4780          MOVLT   pc,link
4790 .show_page
4800          CMP     r7,r11
4810          MOVEQ   pc,link
4820          STMFD   (sp)!,{r2-r9,link}
4830          LDRB    r0,[wp,#tmarg]
4840          BL      margin
4850          MOV     r0,#1
4860          BL      head_foot
4870          LDRB    r0,[wp,#hmarg]
4880          BL      margin
4890          MOV     r4,#0              ;
printed line number
4900          LDRB    r5,[wp,#length]
4910          LDRB    r7,[wp,#columns]
4920          LDRB    r9,[wp,#size]
4930          LDRB    r0,[wp,#balance]
4940          CMP     r0,#false
4950          MOVEQ   r8,r5
4960          BEQ     show_pageloop
4970          MOV     r8,#0
4980          MOV     r0,#0
4990 .calc_bal_size
5000          ADD     r8,r8,#1
5010          ADD     r0,r0,r7
5020          CMP     r0,r10
5030          BLT     calc_bal_size
5040 .show_pageloop
5050          LDRB    r0,[wp,#lmarg]
5060          BL      several
5070          MOV     r6,#0              ;
column count
5080 .show_pageloop2
5090          MLA     r2,r6,r8,r4
5100          CMP     r2,r10
5110          BGE     blank
5120          MLA     r2,r9,r2,r11       ;
base+(column*length+line)*size
5130          MOV     r3,r9
5140 .show_pageloop3
5150          LDRB    r0,[r2],#1
5160          SWI     "XOS_WriteC"
5170          SUBS    r3,r3,#1
5180          BNE     show_pageloop3
5190 .blank
5200          ADD     r6,r6,#1
5210          CMP     r6,r7
5220          LDRNEB  r0,[wp,#gutter]
5230          BLNE    several
5240          BNE     show_pageloop2
5250          SWI     "XOS_NewLine"
5260          ADD     r4,r4,#1
5270          CMP     r4,r8
5280          BLT     show_pageloop
5290 .blank_to_bottom
5300          CMP     r4,r5
5310          BEQ     do_footer
5320          SWI     "XOS_NewLine"
5330          ADD     r4,r4,#1
5340          B       blank_to_bottom
5350 .do_footer
5360          LDRB    r0,[wp,#fmarg]
5370          BL      margin
5380          MOV     r0,#2
5390          BL      head_foot
5400          LDRB    r0,[wp,#eject]
5410          CMP     r0,#true
5420          BEQ     do_page_eject
5430          LDRB    r0,[wp,#bmarg]
5440          BL      margin
5450          B       dont_page_eject
5460 .do_page_eject
5470          SWI     &20100+12
5480 .dont_page_eject
5490          LDMFD   (sp)!,{r2-r9,link}
5500          MOV     r9,#0
5510          MOV     r10,#0
5520          MOV     r7,r11
5530          LDRB    r0,[wp,#pageno]
5540          ADD     r0,r0,#1
5550          STRB    r0,[wp,#pageno]
5560          MOV     pc,link
5570
5580 .head_foot
5590          STMFD   (sp)!,{r1-r11,link
}
5600          MOV     r11,r0
5610          LDRB    r0,[wp,#pageno]
5620          ADD     r1,wp,#command
5630          MOV     r2,#256
5640          SWI     "XOS_ConvertCardin
al2"
5650          STMFD   (sp)!,{r1}
5660          ADD     r1,wp,#work
5670          MOV     r0,#3
5680          STRB    r0,[r1]
5690          MOV     r0,#14
5700          SWI     "XOS_Word"
5710          LDMFD   (sp)!,{r1}
5720          MOV     r0,#32
5730          STRB    r0,[r1],#1
5740          ADD     r0,wp,#work
5750          MOV     r2,#256
5760          ADR     r3,time_format
5770          SWI     "XOS_ConvertDateAn
dTime"
5780          ADD     r0,wp,#command
5790          ORR     r0,r0,#1<<31
5800          ADD     r1,wp,#work
5810          MOV     r2,#256
5820          ADD     r3,wp,#headers
5830          ADD     r3,r3,r11,ASL #8
5840          ADD     r4,wp,#lengths
5850          LDRB    r4,[r4,r11]
5860          SWI     "XOS_SubstituteArg
s"
5870          LDRB    r0,[wp,#width]
5880          SUB     r0,r0,r2
5890          MOV     r0,r0,ASR #1
5900          BL      several
5910          ADD     r0,wp,#work
5920          SWI     "XOS_Write0"
5930          LDMFD   (sp)!,{r1-r11,pc}
5940
5950 .time_format
5960          FNtext("%24:%mi.%se %dy-%m
3-%ce%yr")
5970
5980 .margin
5990          STMFD   (sp)!,{link}
6000 .margin_loop
6010          SUBS    r0,r0,#1
6020          LDMMIFD (sp)!,{pc}^
6030          SWI     "XOS_NewLine"
6040          B       margin_loop
6050
6060 .several
6070          STMFD   (sp)!,{link}
6080 .several_loop
6090          SUBS    r0,r0,#1
6100          LDMMIFD (sp)!,{pc}^
6110          SWI     &20100+ASC" "
6120          B       several_loop
6130
6140 .no_such_file
6150          EQUD    0
6160          FNtext("File not found")
6170
6180 .ListSetup
6190          STMFD   (sp)!,{r1-r11,link
}
6200          MOV     r4,#0
6210          B       set_string
6220 .ListHeader
6230          STMFD   (sp)!,{r1-r11,link
}
6240          MOV     r4,#1
6250          B       set_string
6260 .ListFooter
6270          STMFD   (sp)!,{r1-r11,link
}
6280          MOV     r4,#2
6290 .set_string
6300          BL      init_com
6310          ADD     r8,wp,#headers
6320          ADD     r8,r8,r4,ASL #8
6330          ADD     r9,wp,#lengths
6340          ADD     r6,wp,#command
6350 .read_setup
6360          LDRB    r0,[r6],#1
6370          CMP     r0,#32
6380          BLT     got_setup
6390          BEQ     read_setup
6400          CMP     r0,#ASC""""
6410          BEQ     get_string
6420          CMP     r0,#ASC"&"
6430          BEQ     is_a_num
6440          CMP     r0,#ASC"0"
6450          BLT     not_a_num
6460          CMP     r0,#ASC"9"
6470          BLE     is_a_num
6480 .not_a_num
6490          STRB    r0,[r8],#1
6500          B       read_setup
6510 .is_a_num
6520          MOV     r0,#10
6530          SUB     r1,r6,#1
6540          SWI     "XOS_ReadUnsigned"
6550          BVS     bad_setup
6560          MOV     r6,r1
6570          STRB    r2,[r8],#1
6580          B       read_setup
6590 .get_string
6600          LDRB    r0,[r6],#1
6610          CMP     r0,#32
6620          BLT     bad_setup
6630          CMP     r0,#ASC""""
6640          STRNEB  r0,[r8],#1
6650          BNE     get_string
6660          LDRB    r0,[r6],#1
6670          CMP     r0,#ASC""""
6680          STREQB  r0,[r8],#1
6690          BEQ     get_string
6700          SUBS    r6,r6,#1
6710          B       read_setup
6720 .got_setup
6730          SUB     r8,r8,wp
6740          SUB     r8,r8,#setup
6750          STRB    r8,[r9,r4]
6760          LDMFD   (sp)!,{r1-r11,pc}
6770 .bad_setup
6780          MOV     r0,#0
6790          STRB    r0,[r9,r4]
6800          ADR     r0,setup_err
6810          LDMFD   (sp)!,{r1-r11,link
}
6820          ORRS    pc,link,#vbit
6830
6840 .setup_err
6850          EQUD    0
6860          FNtext("Bad string")
6870
6880 .write_line_star
6890          STMFD   (sp)!,{link}
6900          MOV     r0,#ASC"*"
6910          B       write_line_bput
6920 .write_line
6930          STMFD   (sp)!,{link}
6940 .write_line_loop
6950          LDRB    r0,[r2],#1
6960          CMP     r0,#0
6970          LDMEQFD (sp)!,{pc}
6980 .write_line_bput
6990          SWI     "XOS_BPut"
7000          B       write_line_loop
7010
7020 .write_return
7030          STMFD   (sp)!,{link}
7040          MOV     r0,#10
7050          SWI     "XOS_BPut"
7060          LDMFD   (sp)!,{pc}
7070
7080 .init_com
7090          LDR     wp,[wp]
7100          ADD     r2,wp,#command
7110 .copy_tail
7120          LDRB    r3,[r0],#1
7130          CMP     r3,#32
7140          MOVLT   r3,#13
7150          STRB    r3,[r2],#1
7160          BGE     copy_tail
7170          MOV     pc,link
7180
7190 .ListSet_Help
7200          EQUS    "*ListSet sets one
or more of these ListAid parameters:"
7210          EQUS    crlf$+crlf$
7220          FNparhelp("Balance <Y/N>",
"Balance columns in part filled pages")
7230          FNparhelp("Columns <n>","S
et number of printed columns")
7240          FNparhelp("Eject <Y/N>","F
ollow each page with a page eject")
7250          FNparhelp("Gutter <n>","Se
t gap between columns")
7260          FNparhelp("Length <n>","Se
t number of printable lines per page")
7270          FNparhelp("ColumnSize <n>"
,"Set width of column")
7280          FNparhelp("Width <n>","Set
 page width")
7290          FNparhelp("TopMargin <n>",
"Set margin above header")
7300          FNparhelp("HeaderMargin <n
>","Set margin between header and text")
7310          FNparhelp("FooterMargin <n
>","Set margin between text and footer")
7320          FNparhelp("BottomMargin <n
>","Set margin below footer")
7330          FNparhelp("LeftMargin <n>"
,"Set left margin")
7340          EQUS    crlf$
7350 .ListSet_Syntax
7360          FNtext(syntax$+"[-par_name
 <setting>]")
7370
7380 .Listing_Help
7390          EQUS    "*Listing produces
 a multi-column listing of a file."
7400          EQUS    crlf$
7410 .Listing_Syntax
7420          FNtext(syntax$+"<filename>
")
7430
7440 .ListSetup_Help
7450          EQUS    "*ListSetup sets t
he (optional) setup string output "
7460          EQUS    "before the listin
g. It may be used to set the printer "
7470          EQUS    "font etc. Charact
ers may be included in """" or as ASCII
"
7480          EQUS    "codes. For exampl
e: *ListSetup 27 ""E"" 0"
7490          EQUS    crlf$
7500 .ListSetup_Syntax
7510          FNtext(syntax$+"<string>")
7520
7530 .ListHeader_Help
7540          EQUS    "*ListHeader sets
the (optional) header string. "
7550          EQUS    crlf$
7560 .ListHeader_Syntax
7570          FNtext(syntax$+"<string>")
7580
7590 .ListFooter_Help
7600          EQUS    "*ListFooter sets
the (optional) footer string. "
7610          EQUS    crlf$
7620 .ListFooter_Syntax
7630          FNtext(syntax$+"<string>")
7640
7650 .ListPars_Help
7660          EQUS    "*ListPars display
s the current ListAid parameters."
7670          EQUS    crlf$
7680 .ListPars_Syntax
7690          FNtext(syntax$)
7700
7710 .ListSave_Help
7720          EQUS    "*ListSave saves t
he current ListAid parameters as an "
7730          EQUS    "obey file."
7740          EQUS    crlf$
7750 .ListSave_Syntax
7760          FNtext(syntax$+"<filename>
")
7770
7780 .save_headers
7790          STMFD   (sp)!,{link}
7800          ADR     r2,com1
7810          MOV     r3,#0
7820          BL      write_head_foot
7830          ADR     r2,com2
7840          MOV     r3,#1
7850          BL      write_head_foot
7860          ADR     r2,com3
7870          MOV     r3,#2
7880          BL      write_head_foot
7890          LDMFD   (sp)!,{pc}
7900
7910 .write_head_foot
7920          STMFD   (sp)!,{link}
7930          BL      write_line_star
7940          ADD     r4,wp,#headers
7950          ADD     r4,r4,r3,ASL #8
7960          ADD     r5,wp,#lengths
7970          LDRB    r5,[r5,r3]
7980 .write_hf_loop
7990          SUBS    r5,r5,#1
8000          BMI     written_hf
8010          MOV     r0,#32
8020          SWI     "XOS_BPut"
8030          LDRB    r0,[r4],#1
8040          STMFD   (sp)!,{r1}
8050          ADD     r1,wp,#work
8060          MOV     r2,#256
8070          SWI     "XOS_ConvertCardin
al1"
8080          LDMFD   (sp)!,{r1}
8090          MOV     r2,r0
8100          BL      write_line
8110          B       write_hf_loop
8120 .written_hf
8130          MOV     r0,#10
8140          SWI     "XOS_BPut"
8150          LDMFD   (sp)!,{pc}
8160
8170 .la_commands
8180          FNcommand("Listing",1,1)
8190          FNcommand("ListSet",0,255)
8200 .com1    FNcommand("ListSetup",0,25
5)
8210 .com2    FNcommand("ListHeader",0,2
55)
8220 .com3    FNcommand("ListFooter",0,2
55)
8230          FNcommand("ListPars",0,0)
8240          FNcommand("ListSave",1,1)
8250          EQUD    0
8260 ]
8270 NEXT
8280 PRINT"ListAid assembled in ";O%-co
de;" bytes"
8290 SYS "OS_File",10,"%.ListAid",&FFA,
,code,O%
8300 END
8310 :
8320 DEF FNparhelp(com$,help$)
8330 [OPT pass
8340          EQUS "-"+com$
8350          EQUS STRING$(18-LENcom$,CH
R$31)
8360          EQUS ": "+help$
8370          EQUS crlf$
8380 ]
8390 =""
8400 :
8410 DEF FNalloc(size)
8420 alloc+=size
8430 =alloc-size
8440 :
8450 DEF FNcommand(com$,min,max)
8460 [OPT pass
8470          FNtext(com$)
8480          EQUD    EVAL(com$)
8490          EQUB    min
8500          EQUB    0
8510          EQUB    max
8520          EQUB    0
8530          EQUD    EVAL(com$+"_Syntax
")
```

```
8540        EQUD    EVAL(com$+"_Help")
8550 ]
8560 =0
8570 :
8580 DEF FNtext(text$)
8590 [OPT pass
8600        EQUS    text$
8610        EQUB    0
8620        ALIGN
8630 ]
8640 =0
```

Listing 6

```
   10 REM >Henon attractor (Info 6)
   20 REM By Gareth Eley
   30 REM For BBC B/B+/M/C/E/A
   40 REM (c) BAU November 1991
   50 :
   60 MODE 0:arc=(HIMEM>&10000)
   70 ON ERROR GOTO 160
   80 PROCsetup
   90 PROCparams
  100 REPEAT
  110 PROCplot(X,Y)
  120 PROCchoose
  130 UNTIL FALSE
  140 END
  150 :
  160 IF ERR=17 AND INKEY-2 MODE 0:END
  170 IF rec PROCrec(X%-size%,Y%-size%,s
ize%*2,size%*2):rec=FALSE
  180 IF ERR=17 GOTO 90
  190 IF ERR=20 VDU 7:GOTO 90
  200 REPORT:PRINT" at line ";ERL
  210 END
  220 :
  230 DEF PROCsetup
  240 rec=FALSE
  250 maxpoints=10000
  260 scale=1024
  270 PROCc(0)
  280 VDU 19,0,7;0;
  290 VDU 19,1,0;0;
  300 VDU 28,65,31,79,0,12
  310 MOVE scale,0:DRAW scale,4000
  320 VDU 24,0;0;scale-1;scale-1;
  330 IF arc MOUSE RECTANGLE 0,0,scale,s
cale
  340 PRINT"Henon Curve"
  350 PROCinitxy
  360 A=1.4
  370 B=0.3
  380 X=0
  390 Y=0
  400 *FX4,1
  410 ENDPROC
  420 :
  430 DEF PROCc(s)
  440 VDU 23;10,95+s;0;0;0;0;
  450 ENDPROC
  460 :
  470 DEF PROCinitxy
  480 xmin=-1.5
  490 xmax= 1.5
  500 ymin=-0.5
  510 ymax= 0.5
  520 ENDPROC
  530 :
  540 DEF PROCshowxy
  550 @%=&20509
  560 PROCvar(12,"Xmin",xmin)
  570 PROCvar(14,"Ymin",ymin)
  580 PROCvar(16,"Size",xmax-xmin)
  590 @%=&0A
  600 ENDPROC
  610 :
  620 DEF PROCvar(vpos,lab$,var)
  630 PRINTTAB(0,vpos);lab$;"=";
  640 IF var>=0 VDU 32
  650 PRINT;var
  660 ENDPROC
  670 :
  680 DEF PROCparams
  690 PRINTTAB(0,2);
  700 PROCc(1)
  710 A=FNinput("A",A)
  720 B=FNinput("B",B)
  730 X=FNinput("x",X)
  740 Y=FNinput("y",Y)
  750 PROCc(0)
  760 ENDPROC
  770 :
  780 DEF FNinput(v$,default)
  790 PRINTv$;" : ";:tab=POS
  800 PRINT;default;:end=POS
  810 PRINTTAB(tab,VPOS);
  820 key=GET
  830 IF key=13 PRINT:=default
  840 PRINTSPC(end-tab);TAB(tab,VPOS);
  850 A%=138:X%=0:Y%=key:CALL &FFF4
  860 INPUT ""a$
  870 =VAL(a$)
  880 :
  890 DEF PROCplot(x,y)
  900 PROCshowxy
  910 CLG:GCOL 0,1
  920 xs=scale/(xmax-xmin)
  930 ys=scale/(ymax-ymin)
  940 xc=xs*xmin
  950 yc=ys*ymin
  960 FOR T%=1 TO 5
  970 x1=1+y-A*x*x
  980 y=B*x
  990 x=x1
 1000 NEXT
 1010 N%=0
 1020 REPEAT
 1030 x1=1+y-A*x*x
 1040 y=B*x
 1050 x=x1
 1060 px=x*xs-xc
 1070 py=y*ys-yc
 1080 IF x>xmin AND y>ymin AND x<xmax AN
D y<ymax N%=N%+1:PLOT 69,px,py
 1090 UNTIL N%=maxpoints OR INKEY-17
 1100 ENDPROC
 1110 :
 1120 DEF PROCchoose
 1130 size%=200
 1140 X%=scale/2
 1150 Y%=scale/2
 1160 ox%=0:oy%=0:os%=0
 1170 IF arc MOUSE TO X%,Y%
 1180 GCOL 3,1
 1190 oxmin=xmin
 1200 oymin=ymin
 1210 done=FALSE
 1220 REPEAT
 1230 IF X%<>ox% OR Y%<>oy% OR size%<>os
% PROCredraw
 1240 PROCgetpos
 1250 IF Z=1 AND size%>10 size%=size%-4
 1260 IF Z=4 AND size%<=scale size%=size
%+4
 1270 IF Z=2 PROCnewlimits
 1280 IF INKEY$(0)="R" PROCinitxy:PROCsh
owxy:done=TRUE
 1290 UNTIL done
 1300 ENDPROC
 1310 :
 1320 DEF PROCredraw
 1330 *FX19
 1340 PROCrec(ox%-os%,oy%-os%,os%*2,os%*
2)
 1350 rec=FALSE
 1360 PROCrec(X%-size%,Y%-size%,size%*2,
size%*2)
 1370 rec=TRUE
 1380 ox%=X%:oy%=Y%:os%=size%
 1390 ENDPROC
 1400 :
 1410 DEF PROCrec(a,b,c,d)
 1420 IF arc RECTANGLE a,b,c,d:ENDPROC
 1430 MOVE a,b:DRAW a+c,b:DRAW a+c,b+d:D
RAW a,b+d:DRAW a,b
 1440 ENDPROC
 1450 :
 1460 DEF PROCgetpos
 1470 IF arc MOUSE X%,Y%,Z ELSE Z=0
 1480 IF INKEY-1 step=32 ELSE step=4
 1490 IF INKEY-26 AND X%>0 X%=X%-step
 1500 IF INKEY-122 AND X%<scale X%=X%+st
ep
 1510 IF INKEY-42 AND Y%>0 Y%=Y%-step
 1520 IF INKEY-58 AND Y%<scale Y%=Y%+ste
p
 1530 IF (X%<>ox% OR Y%<>oy%) AND arc MO
USE TO X%,Y%
 1540 Z=Z-(INKEY-103)-2*(INKEY-99)-4*(IN
KEY-104)
 1550 ENDPROC
 1560 :
 1570 DEF PROCnewlimits
 1580 xmin=oxmin+(X%-size%)/xs
 1590 xmax=oxmin+(X%+size%)/xs
 1600 ymin=oymin+(Y%-size%)/ys
 1610 ymax=oymin+(Y%+size%)/ys
 1620 done=TRUE
 1630 ENDPROC
```

Listing 7

```
   10 REM >Creepy (Info7)
   20 REM By Dean Murphy
   30 REM For Archimedes only
   40 REM (C) BAU November 1991
   50 :
   60 MODE 13:OFF
   70 PROCcode
   80 PROCpicture
   90 disp=1
  100 REPEAT
  110 A%=250      : REM 1600 with Arm 3
  120 CALL creep
  130 WAIT
  140 SYS 6,113,3-disp
  150 disp=3-disp
  160 SWAP !Screen,Screen!4
  170 UNTIL0
  180 :
  190 DEF PROCcode
  200 DIM code 4000
  210 x=2
  220 y=3
  230 col=4
  240 num=9
  250 read=10
  260 write=11
  270 addr=12
  280 sp=13
  290 link=14
  300 pc=15
  310 FOR pass=0 TO 2 STEP 2:P%=code
  320 [OPT pass
  330 .creep   STMFD    (sp)!,{link}
  340 MOV      R14,R0
  350 LDR      read,Screen
  360 LDR      write,Screen+4
  370 MOV      R12,#(320*256/(10*4*4))
  380 .copy    LDMIA    (read)!,{R0-R9}
  390 STMIA    (write)!,{R0-R9}
  400 LDMIA    (read)!,{R0-R9}
  410 STMIA    (write)!,{R0-R9}
  420 LDMIA    (read)!,{R0-R9}
  430 STMIA    (write)!,{R0-R9}
  440 LDMIA    (read)!,{R0-R9}
  450 STMIA    (write)!,{R0-R9}
  460 SUBS     R12,R12,#1
  470 BNE      copy
  480 LDR      read,Screen
  490 LDR      write,Screen+4
  500 LDR      R7,Seed
  510 LDR      R8,Xor
  520 MOV      num,R14
  530 .pickx   FNrnd(9)
  540 CMP      R0,#320
  550 BGE      pickx
  560 MOV      x,R0
  570 FNrnd(8)
  580 MOV      y,R0
  590
  600 ADD      addr,read,y,ASL #6
  610 ADD      addr,addr,y,ASL #8
  620 LDRB     col,[addr,x]!
  630 \        CMP      col,#0
  640 \        BEQ      next
  650 .pickd   FNrnd(2)
  660 MOV      R1,x
  670 MOV      R2,y
  680 CMP      R0,#0
  690 ADDEQ    R1,R1,#1
  700 CMP      R0,#1
  710 SUBEQ    R1,R1,#1
  720 CMP      R0,#2
  730 ADDEQ    R2,R2,#1
  740 CMP      R0,#3
  750 SUBEQ    R2,R2,#1
  760 CMP      R1,#320
  770 BCS      pickd
  780 CMP      R2,#256
  790 BCS      pickd
  800 ADD      addr,write,R2,ASL #6
  810 ADD      addr,addr,R2,ASL #8
  820 STRB     col,[addr,R1]
  830 .next    SUBS     num,num,#1
  840 BNE      pickx
  850 STR      R7,Seed
  860 LDMFD    (sp)!,{pc}
  870 :
  880 .Seed    EQUD     TIME
  890 .Xor     EQUD     &1D872B41
  900 .Screen  EQUD     148
  910 EQUD     -1
  920 ]NEXT
  930 SYS "OS_ReadVduVariables",Screen,S
creen
  940 Screen!4=!Screen+320*256
  950 ENDPROC
  960 :
  970 DEF FNrnd(n)
  980 [OPT pass
  990 MOV      R0,#0
 1000 ]FOR bit=1 TO n:[OPT pass
 1010 MOVS     R7,R7,LSL #1
 1020 EORCS    R7,R7,R8
 1030 ADC      R0,R0,R0
 1040 ]:NEXT
 1050 =""
 1060 :
 1070 DEF PROCpicture
 1080 FOR i=1 TO 100
 1090 GCOL RND(127) TINT RND(255)
 1100 CIRCLE  RND(1280),RND(1024),RND(30
0)
 1110 NEXT
 1120 ENDPROC
```

Listing 8

```
   10 REM >Rockets (Info8)
   20 REM By Jan Vlietinck
   30 REM For Archimedes only
   40 REM (C) BAU November 1991
   50 :
   60 ON ERROR MODE0:IF ERR<>17 PRINTREP
ORT$;" at line ";ERL:END ELSE END
   70 MODE 13:OFF
   80 PROCassemble
   90 REPEAT
  100 R=RND(8000)+100
  110 TIME=0
  120 REPEAT
  130 CLS
  140 !Num=R/2+RND(R/2)
  150 !Rnd1=RND
  160 !Rnd2=RND
  170 !Xpos=RND(320)<<13
  180 !Ypos=(RND(200)+20)<<13
  190 !Colour=RND(254)
  200 CALL init
  210 WAIT
  220 CALL bang
  230 UNTIL TIME>200
  240 UNTIL 0
  250 END
  260 :
  270 DEF PROCassemble
  280 DIM code% 170000
  290 x=3
  300 y=4
  310 vx=5
  320 vy=6
  330 off=7
  340 screen=8
  350 colour=9
  360 table=10
  370 count=11
  380 link=14
  390 pc=15
  400 FOR pass%=0 TO 2 STEP 2
  410 P%=code%
  420 [OPT pass%
  430 .init    ADR      table,Table
  450 LDR      count,Num
  460 LDR      R1,Rnd1
  470 LDR      R2,Rnd2
  480 LDR      x,Xpos
  490 LDR      y,Ypos
  500 .loop    ADD      R1,R1,R1,LSL #2
  510 ADD      R2,R2,R2,LSL #2
  520 MOV      vx,R1,LSR #16
  530 SUB      vx,vx,#128<<8
  540 MOV      vy,R2,LSR #16
  550 SUB      vy,vy,#128<<8
  560 MUL      R0,vx,vx
  570 MLA      R0,vy,vy,R0
  580 CMP      R0,#1<<30
  590 BHI      loop
  600 CMP      R0,#1<<16
  610 BLO      loop
  620 STMIA    (table)!,{x,y,vx,vy}
  630 SUBS     count,count,#1
  640 BNE      loop
  650 MVN      R0,#0
  660 STR      R0,[table]
  670 MOV      pc,link
  680 :
  690 .bang    MOV      count,#200
  700 LDR      colour,Colour
  710 LDR      screen,Screen
  720 .repeat  ADR      table,Table
  730 .for     LDMIA    table,{x,y,vx,vy}
  740 ADD      vy,vy,#1<<5
  750 ADD      x,x,vx
  760 ADD      y,y,vy
  770 MOV      R1,x,LSR #13
  780 MOV      R2,y,LSR #13
  790 ADD      off,R2,R2,LSL #2
  800 ADD      off,R1,off,LSL #6
  810 CMP      R1,#320
  820 CMPLO    R2,#256
  830 ORR      R0,vx,colour
  840 STRLOB   R0,[screen,off]
  850 MOVHS    x,#1<<30
  860 STMIA    (table)!,{x,y,vx,vy}
  870 .fast    LDR      x,[table],#16
  880 CMP      x,#1<<30
  890 BEQ      fast
  900 SUB      table,table,#16
  910 CMN      x,#1
  920 BNE      for
  930 SUBS     count,count,#1
  940 BNE      repeat
  950 MOV      pc,link
  960 :
  970 .Screen  EQUD     148
  980 EQUD     -1
  990 .Colour  EQUD     0
 1000 .Rnd1    EQUD     0
 1010 .Rnd2    EQUD     0
 1020 .Xpos    EQUD     0
 1030 .Ypos    EQUD     0
 1040 .Num     EQUD     0
 1050 .Table
 1060 ]
 1070 NEXT
 1080 SYS "OS_ReadVduVariables",Screen,S
creen
 1090 ENDPROC
```

Listing 9

```
   10 REM >Bubbles (Info9)
   20 REM By James Wilkinson
   30 REM For Archimedes only
   40 REM (C) BAU November 1991
   50 :
   60 ON ERROR MODE 0:IF ERR<>17 PRINTRE
PORT$;" at line ";ERL:END ELSE END
   70 MODE 0:OFF
   80 frames=FNframes
   90 FOR frame=1 TO frames
  100 PROCwrite(frame)
  110 CLS
  120 NEXT
  130 MOUSE ON 1
  140 size=0
  150 count=0
  160 frame=0
  170 type=3
  180 CLS
  190 REPEAT
  200 WAIT
  210 PROCdisplay((frame+frames-1)MODfra
mes+1)
  220 PROCwrite(frame+1)
  230 MOUSE mx,my,mz
  240 IF (mz AND 2) size=40
  250 IF (mz AND 4) THEN
  260 IF size=0 count=0
  270 size=30+20*COSRAD(count*2)
```




```
  280 ENDIF
  290 IF (mz AND 1) THEN
  300 IF size=0 count=0
  310 size=30-20*COSRAD(count*2)
  320 ENDIF
  330 IF mz<>0 THEN
  340 PROCbubble(mx,my,size,type)
  350 ELSE
  360 size=0
  370 ENDIF
  380 key$=INKEY$0
  390 IF key$>"0" AND key$<"6" type=VALk
ey$
  400 frame=(frame+1)MODframes
  410 count+=1
  420 UNTIL FALSE
  430 :
  440 DEF PROCdisplay(scrn)
  450 SYS"OS_Byte",113,scrn
  460 ENDPROC
  470 :
  480 DEF PROCwrite(scrn)
  490 SYS "OS_Byte",112,scrn
  500 ENDPROC
  510 :
  520 DEF PROCbubble(ox,oy,radius,type)
  530 CASE type OF
  540 WHEN 1:PROCc(0,1)                 : R
EM white edge
  550 WHEN 2:PROCcf(0,1)                : R
EM white
  560 WHEN 3:PROCcf(0,0):PROCc(0,1)  : R
EM black, white edge
  570 WHEN 4:PROCcf(0,1):PROCc(0,0)  : R
EM white, black edge
  580 WHEN 5:PROCcf(32,0):PROCc(0,1) : R
EM pattern, white edge
  590 ENDCASE
  600 ENDPROC
  610 :
  620 DEF PROCc(a,b)
  630 GCOL a,b:CIRCLE ox,oy,radius
  640 ENDPROC
  650 :
  660 DEF PROCcf(a,b)
  670 GCOL a,b:CIRCLE FILL ox,oy,radius
  680 ENDPROC
  690 :
  700 DEF FNframes
  710 SYS "OS_ReadDynamicArea",2 TO ,scr
eensize
  720 =screensize DIV (20*1024)
```

Listing 10

```
   10 REM >Tree2 (Info10)
   20 REM By Paul McKenzie
   30 REM For BBC B/B+/M/C/E/A
   40 REM (C) BAU November 1991
   50 :
   60 gxr=FALSE
   70 :
   80 MODE 1
   90 VDU 23;10,32;0;0;0;
  100 VDU 29,640;0;
  110 VDU 19,1,1;0;
  120 VDU 19,2,2;0;
  130 VDU 19,3,5;0;
  140 steps=7
  150 len=300
  160 type=1:PROCt(0,0,len,90,steps)
  170 type=2:PROCt(0,0,len,90,steps)
  180 END
  190 :
  200 DEF PROCt(x,y,l,a,s)
  210 IF s=0 ENDPROC
  220 ox=x:x=ox+l*COSRAD(a)
  230 oy=y:y=oy+l*SINRAD(a)
  240 IF type=1 PROCbranch ELSE PROCleav
es
  250 PROCt(x,y,l*0.6,a+30,s-1)
  260 PROCt(x,y,l*0.7,a-60,s-1)
  270 PROCt(x,y,l*0.5,a+80,s-1)
  280 ENDPROC
  290 :
  300 DEF PROCbranch
  310 IF gxr GCOL 32,1 ELSE GCOL 0,1
  320 w=l/10
  330 MOVE ox,oy :MOVE ox+w*COSRAD(a+90)
,oy+w*SINRAD(a+90)
  340 PLOT 85,x,y:PLOT 85,x+w*COSRAD(a+9
0),y+w*SINRAD(a+90)
  350 ENDPROC
  360 :
  370 DEF PROCleaves
  380 FOR leaf=1 TO 20
  390 IF RND(5)=1 GCOL 0,3 ELSE GCOL 0,2
  400 PLOT 69,x+RND(32)-16,y+RND(32)-16
  410 NEXT
  420 ENDPROC
```

Listing 11

```
   10 REM >Rope (Info11)
   20 MODE0:OFF:OSCLI"POINTER 1":N=10:L=
700:E=.7:g=.2:D=L/N:DIMV(N),W(N),P(N),Q(
N):REPEATMOUSEX,Y,B:MOVEX,Y:FORI=1TON:x=
P(I)-X+V(I)*E:y=Q(I)-Y+W(I)*E:d=D/SQR(x*
x+y*y+.4):X+=x*d:P(I)=X:Y+=y*d:Q(I)=Y:d=
d/2-.5:V(I)+=x*d:W(I)+=y*d-g:V(I-1)-=x*d
:W(I-1)-=y*d+g:NEXT:WAIT:CLS:FORI=1TON:D
RAWP(I),Q(I):NEXT:UNTIL0
```

Listing 12

```
   10 REM >JDUP (Info12)
   20 MODE0:P=10:L=20:DIMC(P),W P,H P:FO
RY=L-1TO0STEP-1:Z=0:B=212*Y/L:FORi=1TOP:
C(i)=RND(400)+120:W?i=RND(40)+9:H?i=RND(
20):NEXT:z=B:FORx=0TO639:y=B+Z:Z=ABS(Z+(
RND(5)=1)):FORi=1TOP:O=180*(x-C(i)+W?i)/
(2*W?i):y=y+H?i*SINRAD(-O*(O>=0ANDO<180)
):NEXT:GCOL0,0:MOVEx*2,B*4:DRAWx*2,y*4:G
COL0,1:DRAW(x-1)*2,z*4:z=y:NEXT,
```

Pieces of Eight

Listing 1

```
   10 REM >Pythagoras (Tree of) (Po81)
   20 REM By Albert Koelmans
   30 REM For BBC B/B+/M/C/E/A
   40 REM (C) BAU November 1991
   50 REM From February 1987
   60 :
   70 MODE 0
   80 INPUT"X coordinate : "X%
   90 INPUT"Y coordinate : "Y%
  100 INPUT"Initial size : "L%
  110 INPUT"Mininum size : "M%
  120 INPUT"Start angle  : "a
  130 INPUT"Alternation  : "mod
  140 CLS
  150 a=RAD(a)
  160 MOVE X%-L%,Y%:DRAW X%-L%,2*L%+Y%
  170 DRAW X%+L%,2*L%+Y%:DRAW X%+L%,Y%
  180 DRAW X%-L%,Y%
  190 PROCtree(X%-L%,2*L%+Y%,X%+L%,2*L%+
Y%,X%+L%*(-1+2*SIN(a)*SIN(a)),Y%+2*L%*(1
+SIN(a)*COS(a)),0)
  200 END
  210 :
  220 DEF FNlength(a,b,c,d)
  230 e=a-c
  240 f=b-d
  250 =SQR(e*e+f*f)
  260 :
  270 DEF FNangle(x,y)
  280 IF ABS(x)>0.01 THEN 320
  290 IF ABS(y)<0.01 THEN =0
  300 IF y<0 THEN =1.5*PI
  310 =PI/2
  320 IF x<0 THEN =(ATN(y/x)+PI) ELSE =A
TN(y/x)
  330 :
  340 DEF PROCtree(c11,c12,c21,c22,c31,c
32,m%)
  350 LOCAL v11,v12,v21,v22,e21,e22,e31,
e32,e51,e52,e61,e62,b,c,d,a2
  360 IF FNlength(c11,c12,c21,c22)<=M% E
NDPROC
  370 v11=c32-c22
  380 v12=c21-c31
  390 v21=c12-c32
  400 v22=c31-c11
  410 e21=c31+v11
  420 e22=c32+v12
  430 e31=c21+v11
  440 e32=c22+v12
  450 e51=c31+v21
  460 e52=c32+v22
  470 e61=c11+v21
  480 e62=c12+v22
  490 MOVE c11,c12
  500 DRAW e21,e22
  510 DRAW e31,e32
  520 DRAW c21,c22
  530 DRAW e51,e52
  540 DRAW e61,e62
  550 DRAW c11,c12
  560 c11=e61:c12=e62:c21=e51:c22=e52
  570 v11=c21-c11:v12=c22-c12
  580 b=FNangle(v11,v12)
  590 IF mod=0 a2=a ELSE IF m% MOD mod=0
 a2=PI/2-a ELSE a2=a
  600 c=a2-b
  610 d=SIN(a2)*SQR(v11*v11+v12*v12)
  620 v21=d*SIN(c):v22=d*COS(c)
  630 c31=c11+v21
  640 c32=c12+v22
  650 PROCtree(c11,c12,c21,c22,c31,c32,m
%+1)
  660 c11=e21
  670 c12=e22
  680 c21=e31
  690 c22=e32
  700 v11=c21-c11
  710 v12=c22-c12
  720 b=FNangle(v11,v12):c=a2-b
  730 d=SIN(a2)*SQR(v11*v11+v12*v12)
  740 v21=d*SIN(c)
  750 v22=d*COS(c)
  760 c31=c11+v21
  770 c32=c12+v22
  780 PROCtree(c11,c12,c21,c22,c31,c32,m
%+1)
  790 ENDPROC
```

Listing 2

```
   10 REM >1DLife (Po82)
   20 REM By Susan Stepney
   30 REM For BBC B/B+/M/C/E/A
   40 REM (C) BAU November 1991
   50 REM From November 1988
   60 :
   70 ON ERROR MODE 7:PROCerror
   80 MODE 7
   90 PROCparams
  100 PROCsetup
  110 MODE mode%
  120 VDU 23,1,0;0;0;0;
  130 PROCscreen
  140 WAIT=GET
  150 END
  160 :
  170 DEF PROCsetup
  180 arc=(HIMEM>&10000)
  190 mode%=2
  200 M%=160*2^(2-(mode% MOD 3))
  210 IF arc mode%=12:M%=640
  220 line%=256
  230 xres%=1280/M%
  240 yres%=1024/line%
  250 DIM c1% M%
  260 DIM c2% M%
  270 IF rnd PROCinitrnd ELSE PROCinitse
ed
  280 ENDPROC
  290 :
  300 DEF PROCscreen
  310 LOCAL A%,B%,X%,Y%
  320 Y%=1023
  330 FOR J%=0 TO line%-1
  340 IF J% MOD 2=0 THEN A%=c1%:B%=c2% E
LSE A%=c2%:B%=c1%
  350 FOR I%=0 TO N%-1
  360 GCOL 0,?(A%+I%)
  370 PLOT 69,I%*xres%,Y%
  380 GCOL 0,?(A%+M%-1-I%)
  390 PLOT 69,(M%-1-I%)*xres%,Y%
  400 index%=?(A%+(I%-N%+M%) MOD M%)
  410 index2%=?(A%+(M%-1-I%-N%) MOD M%)
  420 FOR K%=-N%+1 TO N%
  430 index%=index%+?(A%+(I%+K%+M%)MOD M
%)
  440 index2%=index2%+?(A%+ (M%-1-I%+K%)
MOD M%)
  450 NEXT
  460 ?(B%+I%)=rule%(index%)
  470 ?(B%+M%-1+I%)=rule%(index2%)
  480 NEXT I%
  490 X%=N%*xres%
  500 FOR I%=N% TO M%-1-N%
  510 GCOL 0,?(A%+I%)
  520 PLOT 69,X%,Y%
  530 index%=?(A%+I%-N%)
  540 FOR K%=-N%+1 TO N%
  550 index%=index%+?(A%+I%+K%)
  560 NEXT
  570 ?(B%+I%)=rule%(index%)
  580 X%=X%+xres%
  590 NEXT I%
  600 Y%=Y%-yres%
  610 NEXT J%
  620 ENDPROC
  630 :
  640 DEF PROCerror
  650 VDU 23,1,1;0;0;0;
  660 REPORT:PRINT " on line ";ERL
  670 END
  680 ENDPROC
  690 :
  700 DEF PROCparams
  710 INPUT "neighbourhood      N : "N%
  720 INPUT "states             S : "S%
  730 dim%=(S%-1)*(2*N%+1)+1
  740 INPUT "rule               R : "rul
e$
  750 IF LEN(rule$)<dim% rule$=STRING$(d
im%-LEN(rule$),"0")+rule$
  760 DIM rule%(dim%)
  770 FOR I%=0 TO dim%-1
  780 rule%(I%)=EVAL(MID$(rule$,dim%-I%,
1))
  790 IF rule%(I%)>=S% VDU7:PRINT"invali
d state ";rule%(I%);" in rule ";rule$:EN
D
  800 NEXT I%
  810 PRINT "seed pattern"'"  RETURN for
 random,"'"  or string of numbers in ran
ge 0-";S%-1;"  : ":INPUT""seed$
  820 IF seed$="" THEN rnd=TRUE ELSE rnd
 = FALSE
  830 ENDPROC
  840 :
  850 DEF PROCinitrnd
  860 FOR I%=0 TO M%
  870 ?(c1%+I%)=RND(S%)-1
  880 NEXT
  890 ENDPROC
  900 :
  910 DEF PROCinitseed
  920 FOR I%=0 TO M%
  930 ?(c1%+I%)=0
  940 NEXT
  950 len%=LEN(seed$)
  960 l2%=len%/2
  970 start%=M%/2-l2%
  980 end%=M%/2+l2%
  990 IF len% MOD 2=0 THEN end%=end%-1
 1000 FOR I%=start% TO end%
 1010 ?(c1%+I%)=EVAL(MID$(seed$,I%-start
%+1,1))
 1020 IF ?(c1%+I%)>=S% VDU7:PRINT"invali
d state ";?(c1%+I%);" in seed pattern ";
seed$:END
 1030 NEXT
 1040 ENDPROC
```

Listing 3

```
   10 REM >CWD1 - Crossword part 1 (Po83
)
   20 REM By Joe Telford
   30 REM For BBC B+/M/C/A/B with Shad
   40 REM (C) BAU November 1991
   50 REM From November 1988
   60 :
   70 M%=20
   80 MODE 4
   90 VDU 23;8202;0;0;0;
  100 PROCsetup
  110 PROCtitle
  120 CHAIN "CWD2"
  130 :
  140 DEF PROCsetup
  150 VDU 19,0,7;0;
  160 VDU 19,1,0;0;
  170 VDU 23,128,32,80,80,80,32,0,0,0
  180 VDU 23,129,32,96,32,32,112,0,0,0
  190 VDU 23,130,32,80,16,32,112,0,0,0
  200 VDU 23,131,96,16,96,16,96,0,0,0
  210 VDU 23,132,80,80,112,16,16,0,0,0
  220 VDU 23,133,112,64,96,16,96,0,0,0
  230 VDU 23,134,32,64,96,80,32,0,0,0
  240 VDU 23,135,112,16,16,32,32,0,0,0
  250 VDU 23,136,32,80,32,80,32,0,0,0
  260 VDU 23,137,32,80,48,16,32,0,0,0
  270 VDU 23,153,24,28,246,131,246,28,24
,0
  280 VDU 23,154,24,56,111,193,111,56,24
,0
  290 VDU 23,155,1,1,1,1,1,1,1,1
  300 VDU 23,156,0,0,0,0,0,0,0,255
  310 VDU 23,157,1,1,1,1,1,1,1,255
  320 VDU 23,158,255,255,255,255,255,255
,255,255
  330 VDU 23,159,255,129,129,129,129,129
,129,255
  340 ENDPROC
  350 :
  360 DEF PROCtitle
  370 FOR I=1 TO 20
  380 PRINTTAB(1,I);STRING$(20,CHR$159)
  390 NEXT
  400 FOR I=1 TO 8
  410 READ x,y,a$,d
  420 VDU 31,x,y
  430 FOR J=1 TO LEN(a$)
  440 PRINTMID$(a$,J,1);
  450 IF d VDU 8,10
  460 NEXT
  470 NEXT
  480 PROCmess("The Acorn User Crossword
 Program",2,22)
  490 PROCmess(" Another one of Joe's Jo
ttings! ",2,25)
  500 PROCspc
  510 CLS
  520 ENDPROC
  530 :
  540 DEFPROCspc
  550 PROCmess("Press",30,1)
  560 PROCmess("SPACE",30,4):PROCmess("t
o",30,7)
  570 PROCmess("go on.",30,10)
  580 REPEAT:SOUND 1,1,4,20:UNTIL INKEY(
300)=32
  590 LOCALloop
  600 FOR loop=1TO 30:PRINTTAB(30,loop);
STRING$(10," ");:NEXT
  610 ENDPROC
  620 :
  630 DEF PROCdrawwindow(x,y,w,n%,f)
  640 l=(x+1)*32:d=991-(y+n%+1)*32
  650 r=(x+w+1)*32:u=1023-(y+1)*32
  660 VDU18,0,131,24,l;d-12;r+12;u;16
  670 VDU18,0,131,24,l-8;d-4;r+4;u+8;16
  680 VDU18,0,128,24,l-4;d;r;u+4;16,26
  690 ENDPROC
  700 :
  710 DEF PROCmess(t$,x,y)
  720 PROCdrawwindow(x,y,LEN(t$)+1,0,1)
  730 COLOUR128:COLOUR 7
  740 PRINTTAB(x+1,y+1);t$;
  750 ENDPROC
  760 :
  770 DATA 5,6,ACORNUSER,0
  780 DATA 12,12,PROGRAM,0
  790 DATA 15,6,JOES,0
  800 DATA 3,11,ONE,0
  810 DATA 5,8,OF,0
```

```
820 DATA 13,5,CROSSWORD,1
830 DATA 5,6,ANOTHER,1
840 DATA 15,6,JOTTINGS,1
```

Listing 4

```
10 REM >CWD2 - Crossword part 2 (Po84)
20 REM By Joe Telfod
30 REM For BBC B+/M/C/A/B with Shad
40 REM (C) BAU November 1991
50 REM Will not work without Shadow
60 :
70 MODE 132
80 PROCsetup
90 ON ERROR PROCerr
100 REPEAT
110 REPEAT
120 IF NOT sf ch=FNmenu(0,ch)
130 IF ch<>3 PROCsub(ch)
140 UNTIL ch=3
150 UNTIL FNok
160 MODE 7
170 *FX4
180 END
190 :
200 DEF PROCerr
210 VDU3,26:CLOSE#0:COLOUR 128:COLOUR1:PROCcurs(0)
220 PROCcls:m%(2)=0:m%(3)=0
230 IF err$="W" words=0:clues=0:cwd=0:PROCresetcw:err$=""
240 IF err$="B" cwd=0:PROCresetcw:err$=""
250 IF err$="C" clues=0:err$=""
260 IF ERR=17 AND NOTINKEY-1 PROCem("Last action cancelled"):ENDPROC
270 IF ERR=198 PROCem("Disc Full: Change Disc"):ENDPROC
280 IF ERR=190 PROCem("Catalogue Full: Change Disc"):ENDPROC
290 IF ERR=179 PROCem("Directory Full: Change Disc"):ENDPROC
300 REPORT:PRINT" at line ";ERL:*FX4
310 END
320 :
330 DEF PROCsetup
340 DIM cw%(M%,M%),cl(M%,3),a$(11),w$(M%),c$(M%),i$(2),m%(3)
350 DIM osb 13,blk 40
360 err$="":words=0:clues=0:cwd=0:M%=20:ch=0:*FX4,1
370 bem$="Please build/load crossword first"
380 sf=FALSE
390 VDU 23;8202;0;0;0;
400 VDU 19,0,7;0;19,1,0;0;
410 PROCvalid:PROCresetcw
420 ENVELOPE 1,0,0,0,0,0,0,0,126,-2,-1,-1,126,100
430 PROCcurs(0)
440 ENDPROC
450 :
460 DEF PROCvalid
470 cap$=" ABCDEFGHIJKLMNOPQRSTUVWXYZ"
480 low$=" abcdefghijklmnopqrstuvwxyz"
490 nos$=".0123456789"
500 pun$=" -_!#$%&'()=?/*:+;.,<>"+CHR$34
510 all$=nos$+cap$+low$+pun$
520 ENDPROC
530 :
540 DEF FNok
550 PROCmess("Do you really want to exit? (Y/N) ",20)
560 REPEAT A$=CHR$(GET AND 223):UNTIL A$="Y" OR A$="N"
570 PRINTA$
580 PROCwind(2,20,36,0,0)
590 =(A$="Y")
600 :
610 DEF PROCcurs(s%)
620 VDU 23;10,255-s%*152;0;0;0
630 ENDPROC
640 :
650 DEF FNmenu(m,c)
660 PROCmwind(m,1)
670 COLOUR 1:COLOUR 128
680 PRINTTAB(mx,my);t$
690 REPEAT
700 RESTORE (7650+m*20)
710 FOR I=0 TO mn-1
720 READ a$:IF a$="<" a$=CHR$154
730 COLOUR 1+(I=c):COLOUR 128-(I=c)
740 PRINTTAB(mx,my+I+1);a$;
750 IF m=0 AND I<3 OR m=1 AND ch=2 AND (I=0 OR I=4) PRINTSPC(mw-LENa$);CHR$153
760 NEXT
770 REPEAT
780 A=INSTR(CHR$138+CHR$139+CHR$13,GET$)
790 IF A=1 c=(c+1)MODmn
800 IF A=2 c=(c+mn-1)MODmn
810 UNTIL A
820 UNTIL A=3
830 =c
840 :
850 DEF PROCsub(ch)
860 IF NOT sf sub=0:sf=TRUE
870 REPEAT
880 sub=FNmenu(1,sub):ex=(sub=7)
890 IF NOT(ex) ex=FNdosub
900 UNTIL ex<0
910 PROCmwind(1,0)
920 sf=FALSE
930 ENDPROC
940 :
950 DEF FNdosub
960 RESTORE 7730
970 FOR I%=0 TO ch*7+sub
980 READ m$
990 NEXT
1000 =EVAL("FN"+m$)
1010 :
1020 DEF PROCmwind(m,f)
1030 RESTORE (7640+m*20)
1040 READ t$,mx,my,mn,mw
1050 IF m%(m)<>f PROCwind(mx,my,mw,mn,f)
1060 m%(m)=f
1070 ENDPROC
1080 :
1090 DEF FNwenter(f$)
1100 PROCwind(1,11,23,19,1)
1110 PROCwind(26,11,11,2,1)
1120 PROCinf("Enter words.","To exit,","type a *.")
1130 VDU 28,1,30,24,11
1140 words=0
1150 err$="W"
1160 IF f$<>"" PROCoscli("EXEC "+f$)
1170 FOR word=1 TO M%
1180 REPEAT
1190 IF word<10:PRINTTAB(0,word-1);" ";word;":";:ELSE:PRINTTAB(0,word-1);word;":";
1200 w$(word)=FNgpi(20,0,nos$+cap$+"*")
1210 UNTIL w$(word)>" "
1220 IF LEFT$(w$(word),1)="*" words=word-1:word=M%:IF words=0 words=-1
1230 NEXT word
1240 IF words=0 words=M%
1250 IF words=-1 words=0
1260 cwd=0:err$="":VDU26
1270 PROCresetcw
1280 PROCcls
1290 PROCwind(1,11,37,19,0)
1300 =0
1310 :
1320 DEF FNwsave
1330 IF words=0 PROCem("No words to save"):=0
1340 f$=FNsname("words","W")
1350 IF f$="" PROCcls:=0
1360 PROCwind(1,25,37,3,1)
1370 VDU 28,1,28,38,25
1380 PROCoscli("SPOOL "+f$)
1390 FOR loop=1 TO words
1400 PRINT w$(loop)
1410 NEXT
1420 *SPOOL
1430 PROCcls:VDU26
1440 =0
1450 :
1460 DEF FNwload
1470 f$=FNlname("Load words","W")
1480 IF f$="" PROCcls:=0
1490 =FNwenter(f$)
1500 :
1510 DEF FNlista(v)
1520 IF cwd=0 PROCem(bem$):=0
1530 PROCwind(1,15,37,15,1)
1540 VDU 28,1,30,38,15
1550 df=0:VDU 12,v:IF v=3 VDU 14
1560 PRINT'"ANSWERS"'"Across:"
1570 FOR loop=1 TO words
1580 IF df=0 AND cl(loop,2)=0 PRINT'"Down:":df=1
1590 PRINTcl(loop,3);" : ";w$(loop)
1600 NEXT:VDU3,26,15
1610 PROCspc
1620 =0
1630 :
1640 DEF FNcenter(f$)
1650 IF cwd=0 PROCem(bem$):PROCcls:=0
1660 PROCwind(6,12,26,0,1)
1670 PRINTTAB(6,12);"Please enter all the clues."
1680 PROCwind(4,17,30,2,1)
1690 err$="C"
1700 clues=0
1710 IF f$<>"" PROCoscli("EXEC "+f$)
1720 FOR clue=1 TO words
1730 wrd$=STR$(cl(clue,3))
1740 IF cl(clue,3)<10 wrd$=" "+wrd$
1750 IF cl(clue,2)=0 wrd$=wrd$+" DOWN " ELSE wrd$=wrd$+" ACROSS "
1760 wrd$=wrd$+"is: "
1770 PROCmess(wrd$+w$(clue)+STRING$(21-LENw$(clue)," "),15)
1780 VDU28,5,20,34,18
1790 REPEATVDU30
1800 c$(clue)=FNgpi(60,0,all$)
1810 UNTIL c$(clue)>""
1820 VDU26
1830 NEXT clue
1840 err$="":clues=words
1850 PROCcls
1860 =0
1870 :
1880 DEF FNcsave
1890 IF words=0 OR cwd=0 PROCem("No clues to save"):=0
1900 f$=FNsname("clues","C")
1910 IF f$="" PROCcls:=0
1920 PROCwind(1,25,37,3,1)
1930 VDU 28,1,28,38,25
1940 PROCoscli("SPOOL "+f$)
1950 FOR loop=1 TO words
1960 PRINTc$(loop)
1970 NEXT
1980 *SPOOL
1990 PROCcls:VDU 26
2000 =0
2010 :
2020 DEF FNcload
2030 IF cwd=0 PROCem(bem$):PROCcls:=0
2040 f$=FNlname("Load clues","C")
2050 IF f$="" PROCcls:=0
2060 =FNcenter(f$)
2070 :
2080 DEF FNlistc(v)
2090 IF clues=0 PROCem("Please enter clues first"):=0
2100 PROCwind(1,15,37,15,1)
2110 VDU 28,1,30,38,15
2120 df=0:VDU 12,v:IF v=3 VDU 14
2130 PRINT'"CLUES"'"Across:"
2140 FOR loop=1 TO clues
2150 IF df=0 AND cl(loop,2)=0 PRINT'"Down:":df=1
2160 PRINTcl(loop,3);" : ";c$(loop)
2170 NEXT:VDU3,26,15
2180 PROCspc
2190 =0
2200 :
2210 DEF FNbuild
2220 IF words=0 PROCem("No words to fit"):=0
2230 cwdtype=FNmenu(2,0)+1
2240 COLOUR128:COLOUR1
2250 IF cwdtype=3 PROCmwind(2,0):=0
2260 PROCwind(1,11,21,19,1)
2270 PROCwind(26,11,11,2,1)
2280 FOR I%=0 TO 19
2290 PRINTTAB(2,I%+11);STRING$(20,CHR$159)
2300 NEXT
2310 PROCinf("Blanking","grid.","")
2320 cwd=0:PROCresetcw
2330 PROCinf("Sorting","words.","")
2340 err$="W":PROCsort:err$=""
2350 PROCinf("Fitting","words.","")
2360 err$="B":PROCfit:err$=""
2370 IF cwd<>2 cwd=1
2380 IF cwd=1 PROCnumbersquares
2390 PROCspc:PROCmwind(2,0)
2400 =0
2410 :
2420 DEF PROCfit
2430 x=0:REPEAT:x=x+1
2440 PROCfitword(x):VDU 26
2450 UNTIL x>=words
2460 ENDPROC
2470 :
2480 DEF PROCfitword(x)
2490 PRINTTAB(26,11);"Fitting"
2500 PRINTTAB(26,12);"word ";x
2510 PRINTTAB(26,13);"from ";words
2520 VDU 28,2,30,23,11
2530 IF x=1 PROCfitword1:ENDPROC
2540 fitdone=FALSE:state=FALSE
2550 REPEAT
2560 IF cwdtype=1 fitdone=FNclosedloop
2570 IF cwdtype=2 fitdone=FNopenloop
2580 IF NOT fitdone state=FNxchange(x)
2590 UNTIL state OR fitdone
2600 IF FNprint(3)
2610 IF state AND NOT fitdone AND x=words cwd=FNloselast
2620 ENDPROC
2630 :
2640 DEF PROCfitword1
2650 dir=RND(2)-1
2660 IF dir=1 PROCfith1 ELSE PROCfitv1
2670 IF FNprint(3)
2680 ENDPROC
2690 :
2700 DEF PROCnumbersquares
2710 PROCinf("Numbering","Squares","")
2720 LOCAL x,y,n:n=1
2730 FOR y=1 TO M%:FOR x=1 TO M%
2740 IF cw%(x,y)<>0 PROCcheckstart(x,y)
2750 NEXT:NEXT
2760 PROCsortad
2770 startdown=FNfinddown
2780 PROCsortnos(1,startdown-1,"across")
2790 PROCsortnos(startdown,words,"down")
2800 ENDPROC
2810 :
2820 DEF FNfinddown
2830 LOCALn:n=0:REPEAT:n=n+1:UNTIL cl(n,2)=0
2840 =n
2850 :
2860 DEF PROCsortad
2870 PROCinf("Sorting","across &","down")
2880 LOCALinloop,outloop,pointer
2890 FOR outloop=1 TO words-1
2900 pointer=outloop
2910 FOR inloop=outloop+1 TO words
2920 IF cl(inloop,2)>cl(pointer,2) pointer=inloop
2930 NEXTinloop
2940 IF pointer<>outloop PROCswitch(pointer,outloop)
2950 NEXToutloop
2960 ENDPROC
2970 :
2980 DEF PROCsortnos(start,end,t$)
2990 PROCinf("Number","sort "+t$,"")
3000 LOCALinloop,outloop,pointer
3010 FOR outloop= start TO end-1
3020 pointer=outloop
3030 FOR inloop=outloop+1 TO end
3040 IF cl(inloop,3)<cl(pointer,3) pointer=inloop
3050 NEXTinloop
3060 IF pointer<>outloop PROCswitch(pointer,outloop)
3070 NEXToutloop
3080 ENDPROC
3090 :
3100 DEF PROCswitch(a,b)
3110 LOCALspare$,spare,loop
3120 spare$=w$(a):w$(a)=w$(b):w$(b)=spare$
3130 FOR loop=0 TO 3
3140 spare=cl(a,loop):cl(a,loop)=cl(b,loop):cl(b,loop)=spare
3150 NEXT
3160 ENDPROC
3170 :
3180 DEF PROCcheckstart(x,y)
3190 LOCAL loop,flag
3200 FOR loop=1 TO words
3210 IF cl(loop,0)=x AND cl(loop,1)=y cl(loop,3)=n:flag=1
3220 NEXT
3230 IF flag=1 n=n+1
3240 ENDPROC
3250 :
3260 DEF PROCsort
3270 LOCALx,y
3280 FOR x=1 TO words:FOR y=1 TO words-1
3290 IF LENw$(y)<LENw$(y+1) PROCswap(y,y+1)
3300 NEXT:NEXT
3310 ENDPROC
3320  :
3330 DEF PROCswap(a,b):LOCAL A$
3340 A$=w$(a):w$(a)=w$(b):w$(b)=A$
3350 ENDPROC
3360 :
3370 DEF FNxchange(x)
3380 LOCALbubbleup
3390 IF words=x THEN =TRUE
3400 wspare$=w$(x)
3410 FOR bubbleup=x TO words-1
3420 w$(bubbleup)=w$(bubbleup+1)
3430 NEXT
3440 w$(words)=wspare$
3450 =FALSE
3460 :
3470 DEF FNloselast
3480 LOCALA$
3490 PROCmess(w$(words)+" won't fit.",23)
3500 PROCmess("(L)ose or (K)eep it?",26)
3510 REPEAT:A$=CHR$(GET AND 223):UNTIL A$="L" OR A$="K"
3520 PRINTA$
3530 IF A$="K" PROCmess("Word kept - Rebuild crossword",29):PROCresetcw:=2
3540 w$(words)="":words=words-1
3550 PROCmess("Word deleted - crossword OK",29)
3560 =TRUE
3570 :
3580 DEF PROCfith1
3590 py=INT(M%/2):px=py-INT(LENw$(1)/2):cl(1,0)=px:cl(1,1)=py:cl(1,2)=dir
3600 PROCplace(1,w$(1))
3610 ENDPROC
3620 :
3630 DEF PROCfitv1
3640 px=INT(M%/2):py=px-INT(LENw$(1)/2):cl(1,0)=px:cl(1,1)=py:cl(1,2)=dir
3650 PROCplace(1,w$(1))
3660 ENDPROC
3670 :
3680 DEF PROCplace(w,t$)
3690 VDU 31,px,py
3700 IF cl(w,2)=0 PROCplacev(w,t$)
3710 IF cl(w,2)=1 PROCplaceh(w,t$)
3720 ENDPROC
3730 :
3740 DEF PROCplacev(w,t$)
3750 FOR y=cl(w,1) TO cl(w,1)+LENt$-1
3760 cw%(cl(w,0),y)=ASCMID$(t$,1+y-cl(w,1),1)
3770 NEXT:ENDPROC
3780 :
3790 DEF PROCplaceh(w,t$)
3800 FOR x=cl(w,0) TO cl(w,0)+LENt$-1
3810 cw%(x,cl(w,1))=ASCMID$(t$,1+x-cl(w,0),1)
3820 NEXT:ENDPROC
3830 :
3840 DEF PROCresetcw
3850 FOR y=1 TO M%:FOR x=1 TO M%:cw%(y,x)=0:NEXT:NEXT
3860 ENDPROC
3870 :
3880 DEF FNclosedloop
3890 LOCALloop
3900 FOR loop=1 TO x-1
3910 fitdone=FNfit(w$(x),loop,cl(loop,2))
3920 IF fitdone loop=x-1
```

```
3930 NEXT
3940 =fitdone
3950 :
3960 DEF FNopenloop
3970 LOCALloop
3980 FORloop=x-1 TO 1 STEP -1
3990 fitdone=FNfit(w$(x),loop,cl(loop,2))
4000 IF fitdone loop=1
4010 NEXT
4020 =fitdone
4030 :
4040 DEF FNfit(w$,pos,dir)
4050 IF dir=0 THEN =FNfith(w$,pos)
4060 IF dir=1 THEN =FNfitv(w$,pos)
4070 =FALSE
4080 :
4090 DEF FNfith(w$,pos)
4100 dumdir=RND(2)
4110 IF dumdir=1 THEN =FNfithdown(w$,pos)
4120 IF dumdir=2 THEN =FNfithup(w$,pos)
4130 =FALSE
4140 :
4150 DEF FNfithdown(w$,pos)
4160 startx=cl(pos,0)
4170 starty=cl(pos,1)
4180 ltf=LENw$(pos)
4190 LOCALcloop,wloop,dumfit
4200 dumfit=FALSE
4210 FOR cloop=starty TO starty+ltf
4220 FOR wloop=1 TO LENw$
4230 IF cloop<=M% THEN IF cw%(startx,cloop)=ASCMID$(w$,wloop,1) dumfit=FNtryfith(startx,cloop,wloop,w$)
4240 IF dumfit wloop=LENw$
4250 NEXTwloop
4260 IF dumfit cloop=starty+ltf
4270 NEXTcloop
4280 =dumfit
4290 :
4300 DEF FNfithup(w$,pos)
4310 ltf=LENw$(pos)
4320 startx=cl(pos,0)
4330 starty=cl(pos,1)+ltf
4340 LOCALcloop,wloop,dumfit
4350 dumfit=FALSE
4360 FOR cloop=starty TO starty-ltf STEP -1
4370 FOR wloop=1 TO LENw$
4380 IF cloop<=M% THEN IF cw%(startx,cloop)=ASCMID$(w$,wloop,1) dumfit=FNtryfith(startx,cloop,wloop,w$)
4390 IF dumfit wloop=LENw$
4400 NEXTwloop
4410 IF dumfit cloop=starty-ltf
4420 NEXTcloop
4430 =dumfit
4440 :
4450 DEF FNtryfith(cx,cy,wl,w$)
4460 LOCAL loop,realfit
4470 realfit=FALSE
4480 FOR loop=1 TO LENw$
4490 realfit=FNfhp(loop,w$,cx-wl+loop,cy)
4500 IF NOT realfit loop=LENw$
4510 NEXTloop
4520 IF NOT realfit THEN =FALSE
4530 FOR loop=1 TO LENw$
4540 cw%(cx-wl+loop,cy)=ASCMID$(w$,loop,1)
4550 NEXT
4560 cl(x,0)=cx-wl+1
4570 cl(x,1)=cy
4580 cl(x,2)=1
4590 =TRUE
4600 :
4610 DEF FNfhp(loop,w$,xl,yl)
4620 IF (xl-loop)<0 THEN = FALSE
4630 IF (xl<1 OR xl>M%) THEN =FALSE
4640 IF (cw%(xl,yl)<>0 AND cw%(xl,yl)<>ASCMID$(w$,loop,1)) THEN =FALSE
4650 IF (yl+1)<=M% THEN IF (cw%(xl,yl+1)<>0 AND cw%(xl,yl)<>ASCMID$(w$,loop,1)) THEN =FALSE
4660 IF (yl-1)>=0 THEN IF (cw%(xl,yl-1)<>0 AND cw%(xl,yl)<>ASCMID$(w$,loop,1)) THEN =FALSE
4670 IF (xl+1)<=M% THEN IF (cw%(xl+1,yl)<>0 AND cw%(xl+1,yl)<>ASCMID$(w$,loop+1,1)) THEN =FALSE
4680 IF cw%(xl-loop,yl)<>0 THEN =FALSE
4690 =TRUE
4700 :
4710 DEF FNfitv(w$,pos)
4720 dumdir=RND(2)
4730 IF dumdir=1 THEN =FNfitvleftright(w$,pos)
4740 IF dumdir=2 THEN =FNfitvrightleft(w$,pos)
4750 =FALSE
4760 :
4770 DEF FNfitvleftright(w$,pos)
4780 startx=cl(pos,0)
4790 starty=cl(pos,1)
4800 ltf=LENw$(pos)
4810 LOCALcloop,wloop,dumfit
4820 dumfit=FALSE
4830 FOR cloop=startx TO startx+ltf
4840 FOR wloop=1 TO LENw$
4850 IF cloop<=M% THEN IF cw%(cloop,starty)=ASCMID$(w$,wloop,1) THEN dumfit=FNtryfitv(cloop,starty,wloop,w$)
4860 IF dumfit wloop=LENw$
4870 NEXTwloop
4880 IF dumfit cloop=startx+ltf
4890 NEXTcloop
4900 =dumfit
4910 :
4920 DEF FNfitvrightleft(w$,pos)
4930 ltf=LENw$(pos)
4940 startx=cl(pos,0)+ltf
4950 starty=cl(pos,1)
4960 LOCALcloop,wloop,dumfit
4970 dumfit=FALSE
4980 FOR cloop=startx TO startx-ltf STEP -1
4990 FOR wloop=1 TO LENw$
5000 IF cloop<=M% THEN IF cw%(cloop,starty)=ASCMID$(w$,wloop,1) dumfit=FNtryfitv(cloop,starty,wloop,w$)
5010 IF dumfit wloop=LENw$
5020 NEXTwloop
5030 IF dumfit cloop=startx-ltf
5040 NEXTcloop
5050 =dumfit
5060 :
5070 DEF FNtryfitv(cx,cy,wl,w$)
5080 LOCAL loop,realfit
5090 realfit=FALSE
5100 FOR loop=1 TO LENw$
5110 realfit=FNfvp(loop,w$,cx,cy-wl+loop)
5120 IF NOT realfit loop=LENw$
5130 NEXTloop
5140 IF NOT realfit THEN =FALSE
5150 FOR loop=1 TO LENw$
5160 cw%(cx,cy-wl+loop)=ASCMID$(w$,loop,1)
5170 NEXT
5180 cl(x,0)=cx
5190 cl(x,1)=cy-wl+1
5200 cl(x,2)=0
5210 =TRUE
5220 :
5230 DEF FNfvp(loop,w$,xl,yl)
5240 IF (yl-loop)<0 THEN =FALSE
5250 IF (yl<1 OR yl>M%) THEN =FALSE
5260 IF (cw%(xl,yl)<>0 AND cw%(xl,yl)<>ASCMID$(w$,loop,1))THEN =FALSE
5270 IF (xl+1)<=M% THEN IF (cw%(xl+1,yl)<>0 AND cw%(xl,yl)<>ASCMID$(w$,loop,1)) THEN =FALSE
5280 IF (xl-1)>=0 THEN IF (cw%(xl-1,yl)<>0 AND cw%(xl,yl)<>ASCMID$(w$,loop,1)) THEN =FALSE
5290 IF (yl+1)<=M% THEN IF (cw%(xl,yl+1)<>0 AND cw%(xl,yl+1)<>ASCMID$(w$,loop+1,1)) THEN =FALSE
5300 IF cw%(xl,yl-loop)<>0 THEN =FALSE
5310 =TRUE
5320 :
5330 DEF FNxsave
5340 IF cwd=0 PROCem("No crossword to save"):=0
5350 f$=FNsname("crossword","X")
5360 IF f$="" PROCcls:=0
5370 PROCmess("Please wait: Crossword Saving",29)
5380 a%=OPENOUTf$
5390 PRINT #a%,words
5400 FOR I%=1 TO words
5410 PRINT#a%,w$(I%)
5420 NEXT
5430 PRINT #a%,M%
5440 FOR I%=1 TO M%
5450 FOR J%=1 TO M%
5460 BPUT#a%,cw%(I%,J%)
5470 NEXT
5480 FOR J%=0 TO 3
5490 PRINT#a%,cl(I%,J%)
5500 NEXT
5510 NEXT
5520 CLOSE#a%
5530 PROCcls
5540 =0
5550 :
5560 DEF FNxload
5570 f$=FNlname("Load crossword","X")
5580 IF f$="" PROCcls:=0
5590 PROCmess("Please wait: Crossword Loading",29)
5600 cwd=0:words=0:a%=OPENUPf$
5610 INPUT #a%,words
5620 FOR I%=1 TO words
5630 INPUT #a%,w$(I%)
5640 NEXT
5650 INPUT #a%,M%
5660 FOR I%=1 TO M%
5670 FOR J%=1 TO M%
5680 cw%(I%,J%)=BGET#a%
5690 NEXT
5700 FOR J%=0 TO 3
5710 INPUT #a%,cl(I%,J%)
5720 NEXT
5730 NEXT
5740 CLOSE #a%
5750 cwd=1
5760 PROCcls
5770 =0
5780 :
5790 DEF FNdword(v)
5800 IF cwd=0 PROCem(bem$):=0
5810 PROCwind(1,11,21,19,1)
5820 VDU 28,2,30,23,11
5830 IFFNprint(v)
5840 IF v=3 VDU 26:PROCspc
5850 =0
5860 :
5870 DEF FNprint(v)
5880 LOCAL x,y
5890 VDU 30,v
5900 FOR y=1 TO M%:IF v=2 VDU 1,14
5910 FOR x=1 TO M%
5920 IF v=3 AND cw%(x,y)=0 VDU 159
5930 IF v=2 AND cw%(x,y)=0 VDU 42
5940 IF cw%(x,y)<>0 VDU cw%(x,y);
5950 NEXT:IF y<>M% PRINT
5960 NEXT:VDU 3
5970 =0
5980 :
5990 DEF FNpmenu
6000 IF cwd=0 PROCem(bem$):=0
6010 pc=FNmenu(3,0)
6020 IF pc=0 pc=FNdword(2)
6030 IF pc=1 PROCpcwd("S")
6040 IF pc=2 PROCpcwd("L")
6050 PROCcls:VDU26:PROCmwind(3,0)
6060 =0
6070 :
6080 DEF PROCpcwd(t$)
6090 VDU 28,0,31,39,11,29,0;0;2,1,27,1,65,1,8,3
6100 PROCpoutline(1,INT(M%/2),t$)
6110 PROCpoutline(INT(M%/2)+1,M%,t$)
6120 VDU 2,1,27,1,64,3,12
6130 ENDPROC
6140 :
6150 DEF PROCpoutline(start,end,t$)
6160 COLOUR129:CLS:COLOUR128
6170 db$=CHR$10+CHR$8+CHR$8:up$=CHR$(11)
6180 blk$=CHR$(158)+CHR$(158)+db$+CHR$(158)+CHR$(158)+up$
6190 opn$=CHR$(32)+CHR$(155)+db$+CHR$(156)+CHR$(157)+up$
6200 LOCALx,y
6210 VDU30
6220 FOR y=start TO end:FOR x=1 TO M%
6230 IF cw%(x,y)=0 PRINTblk$;:ELSE PRINTopn$;
6240 NEXT:IF y<>end PRINT
6250 NEXT
6260 PROCnumerate(start,end)
6270 MOVE 0,0:DRAW0,671
6280 IF t$="L" PROCdump(16,960,3) ELSE PROCdump(32,640,1)
6290 ENDPROC
6300 :
6310 DEF PROCnumerate(s,e)
6320 LOCALloop
6330 FOR loop=1 TO words
6340 IF cl(loop,1)>=s AND cl(loop,1)<=e PROCputno(cl(loop,0),cl(loop,1)-(s-1),cl(loop,3))
6350 NEXT
6360 ENDPROC
6370 :
6380 DEF PROCputno(x,y,n)
6390 x=(x-1)*64+4:y=664-((y-1)*64)
6400 VDU5
6410 IF n>=10 MOVEx,y:VDU128+(n DIV 10):n = n MOD 10:x=x+16
6420 MOVEx,y:VDU128+n
6430 VDU4
6440 ENDPROC
6450 :
6460 DEF PROCdump(st,n,b)
6470 FOR Y%=671 TO 31+st STEP -st
6480 VDU 2,1,27,1,76,1,n MOD256,1,n DIV 256
6490 FOR X%=0 TO 1276 STEP 4:A%=0
6500 FOR Z%=0 TO st-4 STEP 4
6510 A%=A%*(b+1)+POINT(X%,Y%-Z%)*b
6520 NEXT
6530 PRINTSTRING$(n/320,CHR$1+CHR$A%);
6540 NEXT:IF Y%<>st VDU 1,10
6550 NEXT:VDU 3
6560 ENDPROC
6570 :
6580 DEF FNdel(d$)
6590 f$=FNlname("Delete file",d$)
6600 IF f$<>"" PROCoscli("DELETE "+f$)
6610 PROCcls:VDU 26
6620 =0
6630 :
6640 DEF FNcat(c$,f)
6650 PROCwind(1,17,37,10,1)
6660 PROCmess("Files available:",15)
6670 VDU 28,1,27,38,17:t=0:p=0
6680 PROCoscli("DIR "+c$)
6690 ?osb=0:osb!1=blk:osb!9=0
6700 X%=osb MOD 256:Y%=osb DIV 256:A%=8
6710 REPEAT:osb!5=1:CALL&FFD1
6720 IF osb!5=0 osb!1=blk:?(blk+1+?blk)=13:PRINTTAB(p);$(blk+1);:t=t+1
6730 p=p+12:IF p=36 p=0:PRINT
6740 UNTIL osb!5=1
6750 IF t=0 PRINTTAB(16,4);"<none>"
6760 IF f PROCspc
6770 *DIR $
6780 REM*DIR 1988.NOV.DISC
6790 =t
6800 :
6810 DEF FNsname(t$,p$)
6820 PROCwind(21,1,LEN(t$)+8,2,1)
6830 PRINTTAB(21,1);"Save ";t$;" as ";
6840 REPEAT:PRINTTAB(23,3);p$;".";
6850 f$=FNgpi(7,0,all$):UNTIL f$>" "
6860 f$=p$+"."+f$:a%=OPENUPf$:CLOSE#a%
6870 IF a%<>0 PROCem("That name is in use"):=""
6880 =f$
6890 :
6900 DEF FNlname(t$,p$)
6910 IFFNcat(p$,0)=0 PROCem("No files to load"):=""
6920 PROCwind(21,1,LEN(t$)+3,2,1)
6930 PRINTTAB(21,1);t$;
6940 REPEAT:PRINTTAB(23,3);p$;".";
6950 f$=FNgpi(7,0,all$):UNTIL f$>" "
6960 f$=p$+"."+f$:a%=OPENUPf$:CLOSE#a%
6970 IF a%=0 PROCem("Can't find that file"):=""
6980 VDU 28,0,31,39,14,12
6990 =f$
7000 :
7010 DEF PROCwind(x,y,w,n%,f)
7020 l=x*32:d=991-(y+n%)*32
7030 r=(x+w+1)*32:u=1023-y*32
7040 VDU18,0,128,24,l-12;d-16;r+16;u+12;16
7050 IF f=0 ENDPROC
7060 VDU18,0,131,24,l;d-12;r+12;u;16
7070 VDU18,0,131,24,l-8;d-4;r+4;u+8;16
7080 VDU18,0,128,24,l-4;d;r;u+4;16,26
7090 ENDPROC
7100 :
7110 DEF PROCcls
7120 PROCwind(1,11,37,19,0)
7130 PROCwind(21,1,17,11,0)
7140 ENDPROC
7150 :
7160 DEF PROCmess(t$,y)
7170 x=19-INT((LENt$)/2)
7180 PROCwind(x,y,LEN(t$),0,1)
7190 COLOUR128:COLOUR 7
7200 PRINTTAB(x,y);t$;
7210 ENDPROC
7220 :
7230 DEF PROCinf(i$(0),i$(1),i$(2))
7240 FOR i%=0 TO 2
7250 PRINTTAB(26,11+i%);SPC12
7260 PRINTTAB(26,11+i%);i$(i%)
7270 NEXT
7280 ENDPROC
7290 :
7300 DEF PROCspc
7310 PROCwind(26,11,11,2,1)
7320 PROCinf("Press SPACE","to return","to menu.")
7330 REPEAT:SOUND 1,1,4,20:UNTIL INKEY(300)=32
7340 PROCcls
7350 ENDPROC
7360 :
7370 DEF PROCem(t$)
7380 PROCmess(t$,29)
7390 SOUND1,1,4,10:a=INKEY200
7400 PROCcls
7410 ENDPROC
7420 :
7430 DEF FNgpi(len,effect,valid$)
7440 PROCcurs(1)
7450 LOCALa$,b
7460 a$=""
7470 PRINTSTRING$(len,".");STRING$(len,CHR$(8));:REM*FX15,1
7480 b=GET:IF b=13 PROCcurs(0):=a$
7490 IF b<32 THEN 7480
7500 IF b=127 AND a$="" THEN 7480
7510 IF b=127 a$=LEFT$(a$,LEN(a$)-1):PRINTCHR$b;".";CHR$(8);:GOTO7480
7520 IF effect=0 THEN7550
7530 IF effect=1 b=b AND 223 ELSE b=b OR32
7540 IF effect=3 AND(RIGHT$(a$,1)=" " OR a$="") b=b AND 223
7550 IF LEN(a$)=len OR INSTR(valid$,CHR$b)=0 SOUND1,1,4,20:GOTO7480
7560 PRINTCHR$b;:a$=a$+CHR$b:GOTO7480
7570 :
7580 DEF PROCoscli($blk)
7590 LOCAL X%,Y%
7600 X%=blk MOD 256:Y%=blk DIV 256
7610 CALL &FFF7
7620 ENDPROC
7630 :
7640 DATA Main Menu,1,1,4,9
7650 DATA Words,Clues,Grids,Quit
7660 DATA Actions,12,1,8,7
7670 DATA New,Save,Load,Display,Print,Catalog,Delete,<
7680 DATA Format,21,1,3,6
7690 DATA Tight,Open,<
7700 DATA Method,21,1,4,6
7710 DATA Draft,Small,Large,<
7720 :
7730 DATA wenter(""),wsave,wload,lista(3),lista(2),"cat(""W"",1)",del("W")
7740 DATA center(""),csave,cload,listc(3),listc(2),"cat(""C"",1)",del("C")
7750 DATA build,xsave,xload,dword(3),pmenu,"cat(""X"",1)",del("X")
```

Listing 1

```
   10 REM >MakeApp (Menued1)
   20 REM Create application directory
   30 REM (c) BAU November 1991
   40 :
   50 PRINT "Creating application direct
ory"
   60 *CDIR $.!MenuED
   70 *DIR  $.!MenuED
   80 PROCcreaterunfile
   90 PROCcreatespritesandtemps
  100 PRINT "Application created, now pu
t !Runimage inside it."
  110 CLOSE #0
  120 END
  130 :
  140 DEF PROCcreaterunfile
  150 out%=OPENOUT "!Run"
  160 BPUT #out%,"| > !MenuEd.!Run"
  170 BPUT #out%,"|"
  180 BPUT #out%,"Set MenuEd$Dir <Obey$D
ir>"
  190 BPUT #out%,"WimpSlot -min 64K -max
 64K"
  200 BPUT #out%,"Run ""<Obey$Dir>.!RunI
mage"""
  210 BPUT #out%,"|"
  220 CLOSE #out%
  230 *Settype !Run Obey
  240 PRINT "Runfile created"
  250 ENDPROC
  260 :
  270 DEF PROCcreatespritesandtemps
  280 file%=OPENOUT "!Sprites"
  290 REPEAT
  300 READ number$
  310 IF number$<>"END OF SPRITE DATA" T
HEN
  320  number%=EVAL("&"+number$)
  330  BPUT #out%,number%
  340  ENDIF
  350 UNTIL number$="END OF SPRITE DATA"
  360 CLOSE #file%
  370 *SetType !Sprites Sprite
  380 PRINT "Sprites created"
  390 :
  400 file%=OPENOUT "Templates"
  410 REPEAT
  420 READ number$
  430 IF number$<>"END OF TEMPLATE DATA"
 THEN
  440  number%=EVAL("&"+number$)
  450  BPUT #out%,number%
  460  ENDIF
  470 UNTIL number$="END OF TEMPLATE DAT
A"
  480 CLOSE #file%
  490 *SetType Templates Template
  500 PRINT "Templates created"
  510 ENDPROC
  520 :
  530 REM Sprite data
  540 :
  550 DATA 1,0,0,0,10,0,0,0,C
  560 DATA 3,0,0,FC,2,0,0,21,6D
  570 DATA 65,6E,75,65,64,0,0,0,0
  580 DATA 0,4,0,0,0,11,0,0,0
  590 DATA 0,0,0,0,7,0,0,0,2C
  600 DATA 0,0,0,94,1,0,0,C,0
  610 DATA 0,0,77,77,77,77,77,77,77
  620 DATA 77,77,77,77,77,77,77,77,77
  630 DATA 77,0,0,70,27,22,22,22,22
  640 DATA 22,22,22,72,77,77,77,77,77
  650 DATA 77,77,77,0,0,70,77,77,77
  660 DATA 77,77,77,77,77,77,77,77,77
  670 DATA 77,77,77,77,77,0,0,70,7
  680 DATA 0,0,0,0,0,0,0,70,77
  690 DATA 77,77,77,77,77,77,77,0,0
  700 DATA 70,7,70,77,70,77,77,77,7
  710 DATA 70,77,77,77,77,77,77,77,77
  720 DATA 0,0,70,7,0,0,0,0,0
  730 DATA 0,0,70,77,77,77,77,77,77
  740 DATA 77,77,0,0,70,7,70,77,77
  750 DATA 77,70,77,7,70,22,22,22,22
  760 DATA 22,22,22,72,0,0,70,7,0
  770 DATA 0,0,0,0,0,0,70,77,77
  780 DATA 77,77,77,77,77,77,0,0,70
  790 DATA 7,70,77,77,77,77,70,7,70
  800 DATA 0,0,0,0,0,0,0,70,0
  810 DATA 0,70,7,0,0,0,0,0,0
  820 DATA 0,70,0,7,77,77,77,77,7
  830 DATA 70,0,0,70,7,70,70,77,77
  840 DATA 77,77,7,70,0,0,0,0,0
  850 DATA 0,0,70,0,0,70,7,0,0
  860 DATA 0,0,0,0,0,70,0,77,77
  870 DATA 77,7,77,7,70,0,0,70,7
  880 DATA 70,77,77,70,77,77,7,70,0
  890 DATA 0,0,0,0,0,0,70,0,0
  900 DATA 70,7,0,0,0,0,0,0,0
  910 DATA 70,0,77,7,77,77,77,7,70
  920 DATA 0,0,70,77,77,77,77,77,77
  930 DATA 77,77,77,0,0,0,0,0,0
  940 DATA 0,70,0,0,0,77,77,77,77
  950 DATA 77,77,77,77,77,0,77,77,77
  960 DATA 77,7,7,70,0,0,70,0,0
  970 DATA 0,0,0,0,0,0,70,0,0
  980 DATA 0,0,0,0,0,70,0,0,0
  990 DATA 77,77,77,77,77,77,77,77,77
 1000 DATA 77,77,77,77,77,77,77,77,0
 1010 DATA 0,F0,FF,FF,FF,FF,FF,FF,FF
 1020 DATA FF,FF,0,0,0,0,0,0,0
 1030 DATA 0,0,0,F0,FF,FF,FF,FF,FF
 1040 DATA FF,FF,FF,FF,0,0,0,0,0
 1050 DATA 0,0,0,0,0,F0,FF,FF,FF
 1060 DATA FF,FF,FF,FF,FF,FF,0,0,0
 1070 DATA 0,0,0,0,0,0,0,F0,FF
 1080 DATA FF,FF,FF,FF,FF,FF,FF,FF,0
 1090 DATA 0,0,0,0,0,0,0,0,0
 1100 DATA F0,FF,FF,FF,FF,FF,FF,FF,FF
 1110 DATA FF,0,0,0,0,0,0,0,0
 1120 DATA 0,0,F0,FF,FF,FF,FF,FF,FF
 1130 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF
 1140 DATA FF,FF,0,0,F0,FF,FF,FF,FF
 1150 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF
 1160 DATA FF,FF,FF,FF,0,0,F0,FF,FF
 1170 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF
 1180 DATA FF,FF,FF,FF,FF,FF,0,0,F0
 1190 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF
 1200 DATA FF,FF,FF,FF,FF,FF,FF,FF,0
 1210 DATA 0,F0,FF,FF,FF,FF,FF,FF,FF
 1220 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF
 1230 DATA FF,0,0,F0,FF,FF,FF,FF,FF
 1240 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF
 1250 DATA FF,FF,FF,0,0,F0,FF,FF,FF
 1260 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF
 1270 DATA FF,FF,FF,FF,FF,0,0,F0,FF
 1280 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF
 1290 DATA FF,FF,FF,FF,FF,FF,FF,0,0
 1300 DATA F0,FF,FF,FF,FF,FF,FF,FF,FF
 1310 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF
 1320 DATA 0,0,0,FF,FF,FF,FF,FF,FF
 1330 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF
 1340 DATA FF,FF,0,0,0,0,0,0,0
 1350 DATA 0,0,0,0,F0,FF,FF,FF,FF
 1360 DATA FF,FF,FF,FF,0,0,0,0,0
 1370 DATA 0,0,0,0,0,0,F0,FF,FF
 1380 DATA FF,FF,FF,FF,FF,FF,0,0,0
 1390 DATA 0,0,0,0,0,0,0,0,F0
 1400 DATA FF,FF,FF,FF,FF,FF,FF,FF,0
 1410 DATA 0,0,FE
 1420 DATA END OF SPRITE DATA
 1430 :
 1440 REM Template data
 1450 :
 1460 DATA FF,FF,FF,FF,0,0,0,0,0
 1470 DATA 0,0,0,0,0,0,0,2C,0
 1480 DATA 0,0,CA,1,0,0,1,0,0
 1490 DATA 0,49,6E,66,6F,D,0,0,0
 1500 DATA 0,0,0,0,0,0,0,0,DC
 1510 DATA 0,0,0,C8,1,0,0,46,3
 1520 DATA 0,0,9C,2,0,0,0,0,0
 1530 DATA 0,0,0,0,0,78,7,0,0
 1540 DATA 12,0,3,84,7,2,7,1,C
 1550 DATA E,2,0,0,0,0,0,0,FC
 1560 DATA FF,FF,0,5,0,0,0,0,0
 1570 DATA 0,3D,1,0,0,0,30,0,0
 1580 DATA 1,0,0,0,0,0,0,0,78
 1590 DATA 1,0,0,FF,FF,FF,FF,13,0
 1600 DATA 0,0,9,0,0,0,A4,2,0
 1610 DATA 0,34,FF,FF,FF,54,3,0,0
 1620 DATA 64,FF,FF,FF,3D,30,0,B7,4F
 1630 DATA 4B,D,74,69,74,6C,65,64,3E
 1640 DATA D,FE,9A,0,0,0,CC,FF,FF
 1650 DATA FF,66,2,0,0,FC,FF,FF,FF
 1660 DATA 3D,61,0,7,8B,1,0,0,FF
 1670 DATA FF,FF,FF,28,0,0,0,9A,0
 1680 DATA 0,0,98,FF,FF,FF,66,2,0
 1690 DATA 0,C8,FF,FF,FF,3D,61,0,7
 1700 DATA 92,1,0,0,FF,FF,FF,FF,28
 1710 DATA 0,0,0,9A,0,0,0,64,FF
 1720 DATA FF,FF,66,2,0,0,94,FF,FF
 1730 DATA FF,3D,61,0,7,A2,1,0,0
 1740 DATA FF,FF,FF,FF,28,0,0,0,9A
 1750 DATA 0,0,0,30,FF,FF,FF,66,2
 1760 DATA 0,0,60,FF,FF,FF,3D,61,0
 1770 DATA 7,B9,1,0,0,FF,FF,FF,FF
 1780 DATA 1E,0,0,0,3E,0,0,0,D0
 1790 DATA FF,FF,FF,9A,0,0,0,F8,FF
 1800 DATA FF,FF,39,0,0,17,4E,61,6D
 1810 DATA 65,3A,D,6C,65,64,3E,D,FE
 1820 DATA E,0,0,0,9C,FF,FF,FF,9A
 1830 DATA 0,0,0,C4,FF,FF,FF,39,0
 1840 DATA 0,17,50,75,72,70,6F,73,65
 1850 DATA 3A,D,3E,D,FE,1E,0,0,0
 1860 DATA 68,FF,FF,FF,9A,0,0,0,90
 1870 DATA FF,FF,FF,39,0,0,17,41,75
 1880 DATA 74,68,6F,72,3A,D,64,3E,D
 1890 DATA FE,E,0,0,0,38,FF,FF,FF
 1900 DATA 9A,0,0,0,60,FF,FF,FF,39
 1910 DATA 0,0,17,56,65,72,73,69,6F
 1920 DATA 6E,3A,D,3E,D,FE,41,62,6F
 1930 DATA 75,74,20,74,68,69,73,20,50
 1940 DATA 72,6F,67,72,61,6D,D,4D,65
 1950 DATA 6E,75,45,64,D,54,65,6D,70
 1960 DATA 6C,61,74,65,20,45,64,69,74
 1970 DATA 6F,72,D,A9,20,54,6F,6E,79
 1980 DATA 20,50,61,74,74,65,72,73,6F
 1990 DATA 6E,2C,20,31,39,39,31,D,31
 2000 DATA 2E,30,30,20,28,30,37,2D,41
 2010 DATA 70,72,2D,39,31,29,D,FE
 2020 DATA END OF TEMPLATE DATA
```

Listing 2

```
   10 REM ><MenuEd$Dir>.!RunImage (MenuE
d2)
   20 REM by Tony Patterson
   30 REM for Archimedes only
   40 REM (c) BAU Nov '91
   50 :
   60 file_open%=FALSE
   70 ON ERROR PROCerror
   80 DIM q% &200,ind% &100,error% &200,
menu% &80,mn% &C000,in%(100)
   90 $q%="TASK"
  100 SYS "Wimp_Initialise",200,!q%,"Men
uEd"
  110 SYS "Wimp_OpenTemplate",,"<MenuEd$
Dir>.Templates"
  120 SYS "Wimp_LoadTemplate",,q%,ind%,i
nd%+&100,-1,"Info",0
  130 SYS "Wimp_CreateWindow",,q% TO inf
owind%
  140 SYS "Wimp_CloseTemplate"
  150 PROCmenu
  160 menu_icon%=FNiconbar
  170 ON ERROR PROCerror
  180 hour%=FALSE
  190 :
  200 REPEAT
  210 :
  220 SYS "Wimp_Poll",&FFF9FDBD,q% TO ev
ent%
  230 :
  240 CASE event% OF
  250 WHEN 2:SYS "Wimp_OpenWindow",,q%
  260 WHEN 6:IF q%!12=-2 AND q%!16=menu_
icon% THEN PROCmouse(q%)
  270 WHEN 9:IF !q%=1 END
  280 WHEN 17,18:CASE q%!16 OF
  290 WHEN 0:END
  300 WHEN 3:IF q%!20=-2 AND q%!24=menu_
icon% AND q%!40=&FFF THENPROCconvert_to_
menufile
  310 ENDCASE
  320 ENDCASE
  330 UNTIL FALSE
  340 :
  350 DEF PROCmouse(q%)
  360 IF q%!8=2 THEN SYS "Wimp_CreateMen
u",,menu%,!q%-64,176
  370 ENDPROC
  380 :
  390 DEF FNiconbar
  400 LOCAL i%
  410 q%!0=-1
  420 q%!4=0
  430 q%!8=0
  440 q%!12=68
  450 q%!16=96
  460 q%!20=&2002
  470 $(q%+24)="!MenuEd"
  480 SYS "Wimp_CreateIcon",,q% TO i%
  490 =i%
  500 :
  510 DEF PROCmenu
  520 $menu%="MenuEd"
  530 menu%!12=&70207
  540 menu%!16=&50
  550 menu%!20=40
  560 menu%!24=0
  570 menu%!28=0
  580 menu%!32=infowind%
  590 menu%!36=&7000019
  600 $(menu%+40)="Info"
  610 menu%!52=128
  620 menu%!56=0
  630 menu%!60=&7000019
  640 $(menu%+64)="Quit"
  650 ENDPROC
  660 :
  670 DEF PROCdataloadack
  680 q%!12=q%!8
  690 q%!16=4
  700 SYS "Wimp_SendMessage",17,q%,q%!4
  710 ENDPROC
  720 :
  730 DEF PROCerror
  740 SYS "XWimp_CreateMenu",,-1
  750 IF file_open% THEN CLOSE#file%
  760 IF hour% SYS "Hourglass_Off"
  770 !error%=ERR
  780 $(error%+4)=REPORT$+": Internal er
ror code ("+STR$ERL+")"+CHR$0
  790 SYS "Wimp_ReportError",error%,3,"M
enuEd"TO,j%
  800 IF j%=2 END
  810 ENDPROC
  820 :
  830 DEF PROCconvert_to_menufile
  840 SYS "Hourglass_On":hour%=TRUE
  850 file%=q%+44
  860 a$=""
  870 WHILE?file%>31
  880 a$+=CHR$(?file%)
  890 file%+=1
  900 ENDWHILE
  910 file%=OPENINa$:file_open%=TRUE
  920 menus%=VAL(FNget)
  930 ?mn%=menus%
  940 ms%=mn%+4*menus%+1
  950 store%=ms%
  960 p%=PTR#file%
  970 SYS "Hourglass_Percentage",0
  980 FORt%=1TOmenus%
  990 PROCmkmenu(0)
 1000 SYS "Hourglass_Percentage",t%*49/m
enus%
 1010 NEXT
 1020 indir%=store%
 1030 store%=mn%+4*menus%+1
 1040 PTR#file%=p%
 1050 FORt%=1TOmenus%
 1060 PROCmkmenu(1)
 1070 SYS "Hourglass_Percentage",t%*49/m
enus%+50
 1080 NEXT
 1090 CLOSE#file%:file_open%=FALSE
 1100 PROCdataloadack
 1110 SYS "OS_File",10,FNr(a$)+"Menus",&
FEC,,mn%,indir%
 1120 SYS "Hourglass_Off":hour%=FALSE
 1130 ENDPROC
 1140 :
 1150 DEF FNr(a$)
 1160 WHILE RIGHT$(a$,1)<>"."
 1170 a$=LEFT$(a$)
 1180 ENDWHILE
 1190 =a$
 1200 :
 1210 DEF PROCmkmenu(pass%)
 1220 LOCALname$,flag$,valid$,c%
 1230 mn%!(4*t%-3)=store%-ms%
 1240 $store%=FNget
 1250 IFLEN($store%)>12 ERROR1,"Menu tit
le too long"
 1260 width%=store%+16
 1270 !width%=16*LEN($store%)-32
 1280 store%+=12
 1290 !store%=&70207
 1300 store%!8=40
 1310 store%!12=0
 1320 store%+=16
 1330 REPEAT
 1340 name$=""
 1350 flag$=""
 1360 valid$=""
 1370 PROCreadentry(name$,flag$,valid$)
 1380 FORlc%=1TOLENflag$
 1390 ch$=MID$(flag$,lc%,1)
 1400 IFINSTR("cbmwtlsiep",ch$)THENMID$(
flag$,lc%,1)=CHR$(ASC(ch$)-32)
 1410 NEXT
 1420 IFLENname$*16>!width%ANDNOTFNin("I
")THEN !width%=LENname$*16
 1430 !store%=FNin("T")+2*FNin("L")+4*FN
in("I")+8*FNin("W")+128*FNin("E")
 1440 IFFNin("M")+FNin("W")=2 ERROR1,"Tw
o submenu pointers"
 1450 indirect%=FALSE
 1460 store%!4=-1
 1470 IFFNin("M")store%!4=-1-FNval("M")
 1480 IFFNin("W")store%!4=FNval("W")
 1490 IFLENname$>12ORFNin("I")ORFNin("P"
) indirect%=TRUE
 1500 IF16*FNval2("I")>!width%THEN!width
%=16*FNval2("I")
 1510 c%=7
 1520 IFFNin("C")c%=FNval("C")
 1530 store%!8=49+FNin("P")+indirect%*-2
56+(FNin("S")<<22)+(c%<<24)+(FNval("B")<
<28)
 1540 IFindirect%THEN
 1550 IFpass%=1THEN
 1560 IFFNin("I")AND NOT FNin("P")THEN
 1570 store%!12=indir%-ms%
 1580 $indir%=name$
 1590 indir%+=FNval("I")+1
 1600 store%!20=FNval("I")+1
 1610 ELSE
 1620 store%!12=indir%-ms%
 1630 $indir%=name$
 1640 valid$=""
 1650 indir%+=LENname$+1
 1660 store%!20=LENname$+1
 1670 ENDIF
 1680 IFFNin("P")THEN
 1690 store%!16=1
 1700 ELSE
 1710 store%!16=indir%-ms%
 1720 $indir%=valid$
 1730 indir%+=LENvalid$+1
 1740 ENDIF
 1750 ENDIF
 1760 ELSE
 1770 $(store%+12)=name$
 1780 ENDIF
 1790 store%+=24
 1800 UNTILFNin("E")=1
 1810 !width%+=16
 1820 ENDPROC
 1830 :
 1840 DEF FNget
 1850 LOCALa$
 1860 REPEAT
 1870 a$=FNstrip(GET$#file%)
 1880 UNTILLEFT$(a$,1)<>"%"
 1890 =a$
 1900 :
 1910 DEF PROCreadentry(RETURN n$,RETURN
f$,RETURN v$)
 1920 LOCALA$,c%
 1930 A$=FNget
 1940 c%=INSTR(A$,"(")
 1950 IFc%=0n$=FNstrip(A$):ENDPROC
 1960 n$=FNstrip(LEFT$(A$,c%-1))
```




```
1970 A$=MID$(A$,c%+1)
1980 c%=INSTR(A$,"}")
1990 IFc%>0f$=LEFT$(A$,c%-1)
2000 c%=INSTR(A$,"{")
2010 IFc%>0v$=FNstrip(MID$(A$,c%+1))
2020 c%=INSTR(A$,"}")
2030 IFc%>0v$=LEFT$(v$,c%-1)
2040 ENDPROC
2050 :
2060 DEF FNstrip(a$)
2070 WHILEASC(a$)=32
2080 a$=MID$(a$,2)
2090 ENDWHILE
2100 WHILERIGHT$(a$,1)=" "
2110 a$=LEFT$(a$)
2120 ENDWHILE
2130 =a$
2140 :
2150 DEF FNin(a$)
2160 =SGN(INSTR(flag$,a$))
2170 :
2180 DEF FNval(a$)
2190 LOCALp%
2200 p%=INSTR(flag$,a$)
2210 =SGN(p%)*VAL(MID$(flag$,p%+1))
2220 :
2230 DEF FNval2(a$)
2240 LOCALp%,q%
2250 p%=INSTR(flag$,a$)
2260 q%=INSTR(flag$,",",p%)
2270 IFq%>p%p%=q%
2280 =SGN(p%)*VAL(MID$(flag$,p%+1))
```

Listing 3

```
   10 REM >LoadMen_B (MenuEd3)
   20 REM by Tony Patterson
   30 REM for Archimedes only
   40 REM (c) BAU Nov '91
   50 :
   60 DEF PROChelp
   70 PRINT
   80 PRINT"BASIC Menu loader for BBC Ac
orn User !FormEd program."
   90 PRINT"by Tony Patterson"'
  100 ENDPROC
  110 :
  120 DEF PROCloadmenus(f$,b%,spritearea
%)
  130 LOCAL menuptr%,f%,file%,num%,i%
  140 menuhand%=0
  150 file%=OPENINf$
  160 num%=BGET #file%
  170 menuptr%=men%
  180 SYS &C,4,file%,b%,num%*4
  190 FOR i%=0 TO num%-1
  191 b%!(i%*4)+=menuptr%
  192 NEXT
  200 FOR i%=1 TO num%
  210 SYS &C,4,file%,menuptr%,28TO,,menu
ptr%
  220 REPEAT
  230 SYS &C,4,file%,menuptr%,24TO,,menu
ptr%
  240 f%=menuptr%-20
  241 IF !f%<-1 THEN !f%=b%!(!f%*-4-8)
  250 IF (menuptr%!-16 AND 256)=256 THEN
  260 f%=menuptr%-12
  261 !f%+=men%
  270 IF f%!4=1 THEN f%!4=spritearea% EL
SE f%!4+=men%
  280 ENDIF
  290 UNTIL(menuptr%!-24 AND128)=128
  300 NEXT
  310 SYS &C,4,file%,menuptr%,1<<16 TO,,
men%
  320 CLOSE#file%
  330 ENDPROC
```

Listing 4

```
   10 REM >LoadMenSrc (MenuEd4)
   20 REM by Tony Patterson
   30 REM for Archimedes only
   40 REM (c) BAU Nov 91
   50 :
   60 DEF PROCLoadMenSrc_Help
   70 PRINT'"ARM source code for MenuEd
file loader."
   80 PRINT"by Tony Patterson."'
   90 PRINT"Call with : A% = Memory buff
er, length should be EXT#menus."
  100 PRINT"               B% = pointer to
null-terminated filename."
  110 PRINT"               C% = pointer to
sprite area, or 1 if none."'
  120 END
  130 :
  140 DEF PROCLoadMenSrc_assem
  150 DIM Q% &100
  160 FORpass=0TO2STEP2
  170 P%=Q%
  180 handle=10
  190 number=9
  200 buffer=8
  210 buffer2=7
  220 sprites=6
  230 [OPT pass
  240 .loadmenus
  250 MOV   sprites,2
  260 MOV   buffer,R0
  270 MOV   R0,#&40
  280 SWI   "OS_Find"
  290 MOV   handle,R0
  300 MOV   R1,handle
  310 SWI   "OS_BGet"
  320 MOV   number,R0
  330 MOV   R0,#4
  340 MOV   R1,handle
  350 MOV   R2,buffer
  360 MOV   R3,number,LSL #2
  370 SWI   "OS_GBPB"
  380 MOV   R3,number,LSL #2
  390 SUB   R3,R3,#4
  400 ADD   buffer2,buffer,number,LSL #2
  410 .relocate_addresses
  420 LDR   R0,[R3,buffer]
  430 ADD   R0,R0,buffer2
  440 STR   R0,[R3,buffer]
  450 SUBS  R3,R3,#4
  460 BPL   relocate_addresses
  470 MOV   R2,buffer2
  480 .loadmenu_loop
  490 MOV   R0,#4
  500 MOV   R1,handle
  510 MOV   R3,#28
  520 SWI   "OS_GBPB"
  530 .read_option
  540 MOV   R0,#4
  550 MOV   R1,handle
  560 MOV   R3,#24
  570 SWI   "OS_GBPB"
  580 LDR   R0,[R2,#-20]
  590 CMN   R0,#1
  600 MVNLT R0,R0,LSL #2
  610 SUBLT R0,R0,#7
  620 LDRLT R0,[R0,buffer]
  630 STRLT R0,[R2,#-20]
  640 LDR   R0,[R2,#-16]
  650 ANDS  R0,R0,#256
  660 BEQ   no_indirection
  670 LDR   R0,[R2,#-12]
  680 CMP   R0,#1
  690 STREQ sprites,[R2,#-12]
  700 ADDNE R0,R0,buffer2
  710 STRNE R0,[R2,#-12]
  720 LDRNE R0,[R2,#-8]
  730 ADDNE R0,R0,buffer2
  740 STRNE R0,[R2,#-8]
  750 .no_indirection
  760 LDR   R0,[R2,#-24]
  770 ANDS  R0,R0,#128
  780 BEQ   read_option
  790 SUBS  number,number,#1
  800 BNE   loadmenu_loop
  810 MOV   R0,#4
  820 MOV   R1,handle
  830 MOV   R3,#1<<16
  840 SWI   "XOS_GBPB"
  850 MOV   PC,R14
  860 ]
  870 NEXT
  880 ENDPROC
```

Listing 5

```
/C menu loader routine
/by Tony Patterson
/for Arc only
/(c) BAU Nov 91
#include "os.h"
#include "swis.h"
#include "wimp.h"

extern void loadmenus(const char
*file,int *buffer,void *spritearea)
{
  int handle,num,i,*men, *f;
  os_regset parameters;

  /* Open file */
  parameters.r[0]=0x40;
  parameters.r[1]=(int)file;
  os_find(&parameters);
  handle=parameters.r[0];

  /* Get number of menus */
  parameters.r[1]=handle;
  os_swi(OS_BGet,&parameters);
  num=parameters.r[0];

  /* Dimension size of menu */
  parameters.r[0]=2;
  parameters.r[1]=handle;
  os_args(&parameters);
  men=malloc(parameters.r[2]);

  /* Read in parameters block */
  parameters.r[0]=4;
  parameters.r[1]=handle;
  parameters.r[2]=(int)buffer;
  parameters.r[3]=num*4;
  os_swi(OS_GBPB,&parameters);

  parameters.r[2]=(int)men;     /* From
now on this is updated by OS_GBPB */
  for(i=(int)buffer;i<((int)buffer+num *
4);i+=4) {  *((int *)i)+=(int)men;};
  for(i=1;i<=num;i++)
      {
       parameters.r[0]=4;          /*
Read menu header block */
       parameters.r[1]=handle;
       parameters.r[3]=28;
       os_swi(OS_GBPB,&parameters);

       do
           {
              parameters.r[0]=4;
/* Read menu icon block */
              parameters.r[1]=handle;
              parameters.r[3]=24;

os_swi(OS_GBPB,&parameters);
              f=(int
*)(parameters.r[2]-20);
              if ( *f < -1)
                  { *f=*(int *)
((int)buffer+(*f * -4-8));};
              if (( *(int
*)(parameters.r[2]-16) & 256)==256) {
                  f=(int
*)(parameters.r[2]-12);
                  if (f[1]==1)
f[1]=(int)spritearea;
                      else
f[1]=(int)men;
                  f[0]+=(int)men;
               }
             }
          while (( *(int
*)(parameters.r[2]-24) & 128) == 0) ;
     }
 parameters.r[0]=4;         /* Read menu
indirected data */
 parameters.r[1]=handle;
 parameters.r[3]=1<<24;
 os_swi(OS_GBPB,&parameters);

  /* close file */
  parameters.r[0]=0;
  parameters.r[1]=handle;
  os_find(&parameters);

}
```

Notes



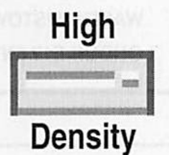
Archimedes Hardware & Software

A•R•X•E
SYSTEMS LTD

Arxe Systems Ltd, P.O.Box 898 Dept 5, London, E7 9RG
Telephone : 081 534 1198

E & OE

See us at the Acorn User Show Stand 67

High

Density





High Density Interface

This new interface replaces the standard 3.5" internal drive system with a new 2MB high density drive and controller card. A new disc filer provides support for a 1.6MB high density disc format, as well as providing full compatibility with the existing ADFS formats.

Price : £199 Availability : October 1991

MultiFS 2

New version of MultiFS with support for high density PC discs. New formats supported include 1.44MB and 1.2MB. In order to use this program the user must have the HDI card fitted.

Price : £42.50 Availability : October 1991

ProDis

Is the professional desktop dissassembler for the Archimedes. Ideal for both the novice and experienced user. Contains many innovative and useful features such as user colour coding of instructions, support for all ARM assembler instructions and the dynamic allocation of memory to cater for programs of all sizes.

Price : £25.49 Availability : September 1991

SCSI Hard Discs

We now offer a comprehensive range of SCSI hard discs at excellent prices. The list shown gives prices for some of the range we currently stock. The drives listed are all internal 3.5" half height models. For external drives (cased with PSU) please add £80 to the listed price.

Model	Capacity	Price
ST125N	21.5MB	£199
ST138N	32.2MB	£213
ST157N	48.6MB	£236
ST177N	60.8MB	£313
ST1096N	83.9MB	£342
ST1133N	113.4MB	£516
ST1186N	158.8MB	£565
ST1201N	171.9MB	£570
ST1239	204.2MB	£610

Removal SCSI Drives

Syquest Drive + 1 Cartridge	£499
Spare Cartridges (42MB)	£79

Interfaces

Lingenuity 16 bit SCSI card	£199
Serial Port 16 bit SCSI card	£149
Serial Port 8 bit SCSI card	£99

Monitors

AOC Multisync colour monitor	£295
NEC 3D Multisync monitor	£455

Desktop Publishing

Acorn Desktop Publisher	£108.00
Equasor	£49.00
Fonts	
Newhall	£39.00
Starter	£39.00
Symbol	£39.00
Impression 2 (Ver 2.13)	£132.00
Impression Business Supplement	£49.00
Impression Junior	£72.00
Ovation	£95.00
Poster	£78.00
ShowPage	£130.00

Word Processing

Easi Writer	£140.00
First Word Plus (Rel 2)	£68.00
Impression 2 (Ver 2.10)	£132.00
Impression Junior	£72.00
Pipedream 3	£110.00
Protext (Ver 5)	£114.00

Graphics

ArcLight	£38.00
Artisan 2	£44.00
Atelier	£72.00
Euclid 2	£46.00
Font FX	£8.00
HotLink Presenter	£43.00
Mogul	£15.00
Pro Artisan	£73.00
Render Bender 2	£120.00
Revelation	£66.00
Snippet	£29.00
Tracer	£46.00

Music/Sounds

Armadeus	£59.00
Articulate	£19.00
Rhapsody(New Version)	£47.00
Superior Speech	£15.00
Tracker	£38.00

New Releases

Acorn Desktop Assembler	£199.00
Acorn Desktop C (DDE)	£245.00
Genesis II	£99.00
Investigator 2	£21.00
Junior Database	£51.00
MultiFS v1.45	£30.64
PC Emulator v1.6 (Runs in a Window)	£87.00
Touch Type	£41.00

Games & Adventures

Alice In Wonderland		£25.00
ArcPinball		£19.00
Bambuzle	(NEW)	£16.98
Blaston		£15.00
Blitz!	(NEW)	£21.23
BlowPipe		£15.00
Boogie Buggy		£19.00
Break 147	(NEW)	£19.00
Chess 3D		£19.00
Chocks Away(Mk2)		£19.00
Chocks Away Missions Disk		£15.00
Corruption		£19.00
Drop Ship		£15.00
Fine Racer		£15.00
Jahangir Khan World Champ. Squash		£23.00
Interdictor II		£27.00
IronLord		£15.00
JoyStick Interface (Serial Port)		£20.00
Mig-29 Fulcrum		£28.00
Master Break		£15.00
No Excuses		£19.00
PowerBand		£19.00
Professor Mariati		£15.00
Provocator		£15.00
Real McCoy 2		£23.00
Saloon Cars		£19.00
Scorpius	(NEW)	£23.79
Top Banana	(NEW)	£20.00
Towers of Babel	(NEW)	£??.00
Twin World		£15.00
World Championship Boxing Manager		£19.00
WorldScape		£15.00
Zelanites	(NEW)	£19.00

All prices exclude VAT (@17.5%). Mainland UK postage free for software cash sales only. Hardware £10 per item. Overseas postage at cost. If you cannot see what you require please write or phone for availability and a copy of our comprehensive software catalogue.

All orders are processed immediately. However, delays can sometimes occur when suppliers are slow to deliver. We apologise for any inconvenience this may cause to our customers. *Please include contact telephone number for written orders.* Official orders welcome, payment due in 30 days. Invoices subject to late payment surcharges and carriage.

3½" DISKS

TYPE QTY	25	50	100
BENCHMARK DS/DD	£17.00	£29.00	£41.00
UNBRANDED DS/DD	£11.00	£18.50	£33.50
EX WESTERN DIGITAL VGA DRIVERS (NEW BUT FORMATTED AND LABELLED). DS/DD	£25.00 PER 100 SOLD OUT		
BENCHMARK DS/HD	£33.60	£61.00	£67.00
UNBRANDED DS/HD	£25.00	£36.00	£59.00
EX WESTERN DIGITAL VGA DRIVERS (NEW BUT FORMATTED AND LABELLED). DS/HD	£45.00 PER 100 SOLD OUT		

5¼" DISKS

TYPE QTY	25	50	100
BENCHMARK DS/DD	£11.00	£18.00	£28.00
UNBRANDED DS/DD	£9.50	£16.00	£24.00
OVERLABEL DS/DD INC. TYVEX ENVELOPE	£20.00 PER 100 SOLD OUT		
BENCHMARK DS/HD	£18.00	£31.50	£52.50
UNBRANDED DS/HD	£14.00	£27.00	£48.00
OVERLABEL DS/HD INC. TYVEX ENVELOPE	£28.00 PER 100 SOLD OUT		

ALL DISKS 100% CERTIFIED ERROR FREE. 3½" INC. LABELS. 5¼" INC. ENVELOPE AND LABEL SET.

DISK STORAGE BOXES

3½" 10 CAPACITY **QTY 5** £4.50
3½" 10 CAPACITY (PRINTED) **QTY 5** £3.00
3½" 50 CAPACITY LOCKABLE £3.70
3½" 100 CAPACITY LOCKABLE £4.70
3½" 240 CAPACITY STACKABLE £15.00
5¼" 10 CAPACITY **QTY 5** £4.99
5¼" 10 CAPACITY (PRINTED) **QTY 5** £3.90
5¼" 50 CAPACITY LOCKABLE £3.70
5¼" 100 CAPACITY LOCKABLE £4.70
5¼" 200 CAPACITY STACKABLE £15.00

PRICES ONLY IF BOUGHT WITH DISKS

ACCESSORIES

IBM PRINTER CABLE 1.8 MTR £4.90
(ALSO FOR ATARI AND AMIGA)
25 PIN M-M AND M-F 1.8 MTR £4.90
36 PIN CENTRONIC M-M 1.8 MTR £4.90
RIGID DOUBLE SIDED MOUSE MAT £4.50



ALL PRICES INCLUDE VAT & P&P. UK ORDERS ONLY

Cheques and Postal Orders to: 24 HOUR ORDERLINE 0597 851 784

Manor Court Supplies Ltd
Telephone: 0597 851 792 Fax No: 0597 851 416
Dept AU 11, Glen Celyn House, Penybont, Llandrindod Wells, Powys, LD1 5SY

EDUCATION AND GOVERNMENT ORDERS WELCOME

GENEALOGY

(See review in Feb '87 *and Aug. '89*)

FAMILY HISTORY SYSTEM The most popular program ever written for us. Enables you to produce a full family tree and many other genealogical listings. £20.95
BBC/Master/Compact version £19.95 – Archimedes version £25.95 £25.95

PAYROLL

9th successful year

EXTENDED PAYROLL Now in its eighth year. The only BBC program for [illegible] tax and National Insurance for up to 400 employees covering [illegible] Four weekly and Monthly pay whether contracted [illegible] of data per employee in two parts [illegible] personal employee information [illegible] acceptable Extended [illegible] compilation of pay from hourly [illegible] pension deductions, sick pay, SSP, SMP [illegible] pre and post tax adjustments and even no pay. Three [illegible] two different types of payslip printout and an optional coin analysis. An annual contract keep you up to date with the budget changes. Send for demo disc £52.50

BOOKKEEPING

(see review in March '89 *Acorn User*)

1) **CASHBOOK** Double entry bookkeeping for home or club use. All data kept in memory. Three character analysis code enables you to know where the money comes from and where it goes. 48 transactions per A4 page. Analysis summary up to 30 categories. £14.95
2) **CASHBOOK D** As 1) + random access giving 2000 items. CASH/BANK or VAT/BANK headings. Password control. String or numeric searches. For schools, clubs & non credit businesses. £23.95
3) **ACCOUNT** As 2) + Credit facility and statements. For small businesses working with credit. £35.95
4) **ACCOUNT-PLUS** As 3) + Invoicing, Orders, Quotations etc. Full sorting of data by 5 options. Automated statements, mailing labels. Multiple automatic nominal ledgers. For independent schools and VAT businesses who wish to cut the effort. £59.95
5) **TAXMAN This new program which has been under development for three years** allows you to enter all your transactions and to printout end of year results with balance sheet and even calculate tax due. The Inland Revenue love it and so do we. Results can be taken from our other accounting programs and entered into TAXMAN making a superb combination. £59.95
6) **Micro-Trader is a full accountancy package with features right through to final** balance sheet. Stock Control at £75.00 extra. For shops/firms, accountants wanting full accounting facilities. Payroll can be integrated £235.00 £88.13

MAILING

218 addresses in memory or up to 1875 on random access disc. Multiple selected and repeat labels, mail merge, full sorts. Ideal for subscription lists, promotions, any kind of mailing. £14.95 £35.95

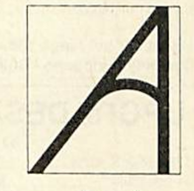
Ask for detailed brochure for more software and other items.
Demo discs available for £2.50 each, Micro-Trader £25. Prices include VAT add 81p p/p
PLEASE NOTE OUR MOVE & CHANGE OF ADDRESS FROM CORNWALL



(FAX AVAILABLE)
Kildonan Courtyard, Barrhill, S. Ayrshire Scotland. KA26 0PS. Tel: 0465 82288



FREE



with every computer we sell...



...our expertise!

If you are buying a new Archimedes or Master Series computer, you don't expect to know all about it from day one. That's where we come in. We don't leave our customers high and dry with their problems — they know they can rely on us to get them out of trouble. Whether it's hardware or software, we're the people who know.

THE DATA STORE

6 Chatterton Road, Bromley, Kent
Tel: 081-460 8991 Fax: 081-313 0400

WeServe of Hampshire
Educational Specialist

Visit our showrooms. See before you buy.

Taxan 795
Multivision with VIDC
£399 + VAT

Canon LBP-4
4ppm Laser with cable & paper
£575 + VAT

Canan BJ10e
360dpi ink jet with cabel & paper
£199.00 + VAT

Philips CM8833 Mk2
Colour Monitor with cable
£225.00 (£195.65 + VAT)

Taxan 775
Multisync Monitor with cable
£369.00 + VAT

PRINTER RIBBONS

	ex VAT	Inc VAT
LX800 & FX800 Print Ribbon	2.29	2.69
LC10 Print Ribbon	4.00	4.70
120D Print Ribbon	4.00	4.70
Taxan/Canon Ribbon	3.22	3.78
Juki 6100 Print Ribbon	1.60	1.88

Phone for full range 100 + original & Compatible ribbons - Bulk discounts

UPGRADES/8271

	ex VAT	Inc VAT
27128A 250nS 12.5v	3.00	3.52
8271 controller	38.26	44.95
6264 LP 150nS	3.00	3.53
Acorn 8271 DFS	44.26	52.00
Acorn 1770 DFS	45.11	53.00
A3 Concept Keyboard	139.00	163.32
Master Keyboard	50.21	59.00
Acorn Tracker Ball	38.30	45.00

A410 + 4M + 40M HD
£1410.00 (£1200.00 + VAT)

A440 + Colour
£1639.00 (£1394.00 + VAT)

A540 + Mulitsync
£3290.00 (£2800.00 + VAT)

A3000 + 2m RAM
£658.00 (£560.00 + VAT)

A3000 LC + 2m RAM
£775.50 (£660 + VAT)

Acorn A440 & Taxan 795
Archimedes A440 50M HD & 4M ram
TAXAN 795 Trinitron Multisync + VIDC
£1599 + VAT
Veryt limited stock

Swift 24
2 year warrantee
£245 inc VAT
(£208.51 + VAT)

Star

LC20 9 pin	£149.00
LC200 9 pin col.	£199.00
LC2410 24 pin	£188.00
LC20200 24 pin	£244.40
LC24200 Colour	£299.00

prices include cable & paper

Citizen 120D+
with cable and paper
£128.00 (£108.94 + VAT)

ROMS/SOFTWARE

	ex VAT	Inc VAT
Inter-\word Rom	35.75	42.00
Spell Master Rom	40.00	47.00
View 3 Rom	40.00	47.00
DTP-Acorn	120.00	141.00
Impressions 2	134.47	158.00

Phone for BBC/AS catalogue 100's
100's of titles inc. Educational

A3000 TV Modulator
£29.90(£25.45 + VAT)

20M Hard Disk
£139.83 (£119.00 + VAT)

Sony DISKETTES
SONY branded
(100% certified error free)

	Inc VAT
10 3.5" DS/DD 135 tpi	£7.50
50 3.5" DS/DD 135 tpi	£32.31
100 3.5" DS/DD 135 tpi	£59.93
1k 3.5" DS/DD 135 tpi	£540.50

DISKETTES
(lifetime warranty) SONY bulk
(100% certified error free)

	Inc VAT
10 3.5" DS/DD 135 tpi	£5.95
50 3.5" DS/DD 135 tpi	£19.80
100 3.5" DS/DD 135 tpi	£37.95
250 3.5" DS/DD 135 tpi	£82.25
1k 3.5" DS/DD 135 tpi	£309.03
50 x 3.5" Disk Box with lock	£5.99
100 x 3.5" Disk Box with lock	£7.50

Phone for our 48 Page Catalogue
EDUCATIONAL & GOVERNMENT ORDERS WELCOME
All products have a 30 day money back & 12 month warranty
Prices subject to variation without prior notification
Established 6 years. 3 minutes from M27 Junction 11.
Free parking. Open 9 to 5.30 Mon. to Friday. 9 to 2 on Saturday
Postage 94p (80p + VAT) Securicor £6.46 (5.50 + VAT)

WeServe


Lager items delivered by Securicor

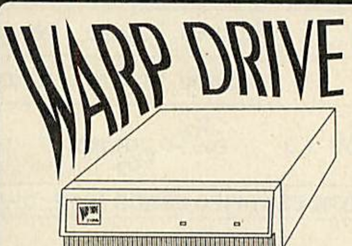

Acorn Dept.
40-42 West Street,
Portchester
Hants
PO16 9UW
Tel: 0705 325354

UNIX MACHINES

Although Chameleon sells the whole range of ACORN machines we specialise in Acorn UNIX computers (R140, R225 etc). This month we have special offers on the R140. add VAT at 17.5%

ACORN R140	ARM2 4Mb RAM 47 Mb hard Disc ...£ 1950.00
ACORN R225	ARM3 4Mb RAM ...£ 1950.00
ACORN R260	ARM3 8Mb RAM 100 Mb hard Disc...£3950.00

One Only R140 ex Demo £ 1700+VAT



Fast data transfer rate
9ms access time
Internal cache

Suitable for RISC OS & RISC IX

105Mb	**£ 449**	**ACORN SCSI-2**	**£ 230**
210Mb	**£ 725**	**RISC iX 1.2**	**£ POA**

All + VAT @ 17.5%, 2 year warranty, Other sizes available.

In our search for the fastest drive, to support RISC iX (Acorn's UNIX) we have developed the Warp Drive an external, high quality, SCSI drive with 9ms access time.

In conjunction with Acorns latest SCSI controller card the Warp drive not only provides UNIX users with a high performance drive, but also is suitable for RISC OS applications.

UNIX UPGRADES

If you want to run RISC iX 1.2 on your Acorn Archimedes we are offering an upgrade service. This latest version of ACORN UNIX requires 100 Mb an ACORN SCSI card and 4Mb of memory. We can arrange for it to be installed on your current 100Mb SCSI anywhere in the UK mainland. Alternatively it can be purchased pre installed on the WARP DRIVE ready for use.

This is the same version of UNIX as supplied on the R260.

£399 for R140 £999 for the Archimedes. call for more details!

UNIX NETWORKING

RISC OS ACORN Computers A310, 410, 420, 440, 3000 can be connected to UNIX hosts (eg ACORN R140 / 260 or SUN) through ethernet or econet. The ACORN TCP/IP Protocol Suiteprovides :

UNIX email, NFS filestore support VT 220 terminal emulation.

X The Gnome compter X Windows software allows ACORN computers to act as X terminals onto X Servers.

R140 / 260 or Archimedes upgraded to RISC IX can act as a bridge between two networks.

ECONET  **ETHERNET**

Chameleon can network Acorn, UNIX, IBM PC and Apple Computers over ethernet. Using Novell Netware ,NFS filestores or X terminal software.

Call for more details.

Call now for a full set of our Latest Data Sheets

For the serious Acorn User

CHAMELEON COMPUTERS LTD.

Stowell Technology Centre
Montford Street
Salford M5 2SE
TEL (061) 745 9849

ArcModem

A brand new 2400 baud pocket sized modem for the Archimedes/A3000

- Fully Hayes compatible
- BELL 103/212A
- CCITT V.21/V.22/V.22bis
- Protective cover
- Elegant design in compact size
- Mains or battery powered
- Intelligent power/saving circuit
- Long battery life

Comes complete with drivers for ArcTerm* versions 6 and 7

ArcModem, Mains adapter 9v battery, leads and driver software:

Only £169.00

Arcterm 7 is a fully multitasking comms package. Available from The Serial Port

The RTFM Joystick Interface

The interface allows up to two 9pin Commodore® or Atari® style joysticks to be connected to your Archimedes/A3000. The interface fits inside your machine, though it does not require a podule slot.

The RTFM Joystick Interface has support from 4th Dimension, Eterna, Krisalis Software, Cygnus Software Engineering, Clares Micro Supplies, Cambridge International Software and Minerva Software.

Over 40 Archimedes games currently work with the Joystick Interface, and you can even control games running under the BBC Emulator!

Only £34.95

Archimedes / A3000 Games

Pon! (**£17.95**, seriously cute, and 9/10 from Micro User)
Brixx! (**£17.95**, the most irritating tune in history, and Micro User gave it 9/10)
Slappit (**£17.95**, ever tried playing football, snooker and pinball at the same time?)
The Arc/A3000 Winter box (**£19.95**, pack includes: Pon in Winterland, Brixx and Zap the Red Wierdos from Mars)
Dominate (**£19.95**, can you find the solution?)
Rekall (**£14.95**, test your powers of memory and deduction)
Bouncer (**£19.95**, fast action arcade game with full screen continuous animation)



RTFM, 43 Hill Street, St Helier, Jersey.
© (0534) 67870, Fax (0534) 68996.



FREE demo disc | **ARCHWAY 2** | **Available NOW**

"ARCHWAY is one of the most impressive and best value for money products that I have yet seen for the Archimedes. Anyone who wishes to write RISC applications in BASIC would have to be quite insane NOT to enlist the aid of this remarkable package."

A & B Computing, February 1990

"You get an excellent piece of software which will make the mountain of programming needed to operate the WIMP environment into a molehill...you can create a complex WIMP environment very quickly...I have had no end of use out of this easy-to-use package."

Archive, July 1989

"I am sure ARCHWAY will cut out a lot of the work of writing simple applications for many people...I think this could be a very good place to start."

BBC Acorn User, April 1991

"I'm extremely impressed with ARCHWAY 2. It's a very ambitious product and one that now provides the many budding Archimedes developers with a facility that will enable them to get their ideas off the drawing board before they evaporate."

RISC User, April 1991

ARCHWAY 2 lets **YOU** unleash the huge program power of RISC OS and the ARM easily and quickly. Build powerful multi-tasking, multi-window applications with pop-up menus, icons, mouse control, etc. of professional quality. Programs are RISC OS compliant.

If you are a little familiar with BBC BASIC then you can create applications using **ARCHWAY 2**. We have optimised the facilities to let you achieve powerful results with a minimum of programming.

The price is £86.91 exc VAT but with p/p (**£102.12 inc VAT** at 17.5%). VISA & ACCESS are welcome. Please add £5.00 for postage in Europe or world-wide surface mail & £20.00 for world airmail. For schools a site licence is included in the price.

Detailed ARCHWAY leaflet and demo disc **FREE** on request. Ask for your **LUCKY DIP** voucher.

FREE Archware FREE Archware FREE Archware

The SOFTWARE BARGAIN OF THE DECADE. To promote the launch of our exciting new range of top quality Archware applications we are giving FREE software with every copy of ARCHWAY 2 sold this summer. You can choose at least 3 programs (or perhaps more with your **LUCKY DIP** voucher).

Choose from a powerful database, Lotus compatible spreadsheet, graphics programs, games and more. Ten products in all. For full details ask for our Archware catalogue.

Your **LUCKY DIP** voucher tells you how many programs you can receive FREE. We send a voucher with each copy of ARCHWAY 2 purchased from Simtron between 1st July and 15th September. Or, just phone/write to ask for your voucher BEFORE ordering. Strictly ONE voucher per customer.

SIMTRON *Programs to help you*

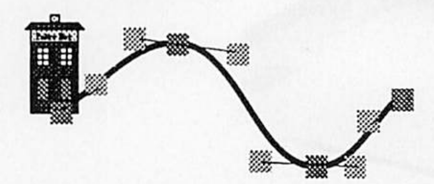
4 Clarence Drive, East Grinstead, West Sussex RH19 4RZ Telephone (0342) 328188

Ace Computing

Einstein=Multi dimensional C^{2}ad

Coming soon from the makers of ***Euclid, Mogul, Splice*, Tween*** and ***ArcLight,*** is an addition to the range.

Einstein is a new tool for editing Space-Time, which provides a consistent approach to editing in 2, 3, 4 or even more dimensions.



"Any discussion of design with the Archimedes must include what has virtually become the standard 3D graphics and animation system.

I mean of course the *Euclid/Mogul/Splice* trio of packages from Ace Computing. *Euclid* is a Risc OS compliant, interactive, multi-document, 3D, graphics and animation program which is so easy to get to grips with.

Designs can be put together, rotated in real time, zoomed in and out of and viewed in perspective from any position...

...It is interesting to note that the next set of BBC TV's *Science Challenge* programmes employ *Euclid* graphics."

CHRIS DRAGE Education section
BBC ACORN USER February 1991



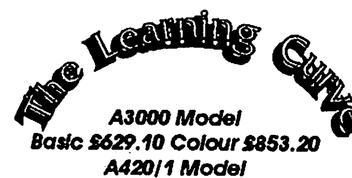


	BASIC	COLOUR
A3000	..see below...	see below...see below
A410/1	£989.10	£1187.10
A420/1	see below...	see below...see below
A440/1	£1529.10	£1727.10
A540	£2695.50	£2893.50

TELEPHONE SUPER SPECIAL

A3000 Basic Model
SUPER Price £CALL#
OR !
A3000 Stereo Colour Model
SUPER Price £CALL#
OR!
A420/1 Stereo Colour Model
SUPER Price £CALL#

*WE ARE OPEN **ALL** DAY SATURDAY*
WHY NOT VISIT OUR SHOWROOM !
WE WILL TRY TO BETTER ANY OTHER DEALER PRICE ... PLEASE TELEPHONE



A3000 Model
Basic £629.10 Colour £853.20
A420/1 Model
Basic £1169.10 Colour £1367.10

OUR PRICES DO NOT INCLUDE V.A.T.

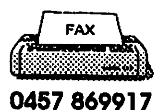
Master 128	£359.10
Cambridge Z88 Lap Top	£189.95
Panasonic KX P1081	£146.95
Citizen Swift 9	£157.00
Citizen Swift 24	£260.83
Citizen Swift colour upgrade	£34.20
Star LC10	£155.40
Star LC10 Colour	£294.35
Philips 8833 Colour	£195.00#
Philips 7522 Amber Screen	£69.52
Philips 8832 Colour	£199.67
Ahkter 40/80 400K Sgle no PSU	£99.00
Ahkter 40/80 800K Dual no PSU	£199.00
Ahkter 40/80 400K Sgle & PSU	£114.53
Ahkter 40/80 800K Dual & PSU	£221.70

OAK COMPUTERS

20 Mb Ext HDisc (B & Master)	£517.75
SCSI 20Mb Add HDisc A3/410	£413.25
SCSI 20Mb Ext HDisc A3000	£508.25
SCSI 45Mb Add HDisc A3/410	£527.25
SCSI 45Mb Ext HDisc A3000	£622.25
SCSI Card for A3000	£189.05
SCSI Card for A3/410	£189.05

WE ARE LICENSED CREDIT BROKERS AND CAN OFFER FINANCE ON COMPUTERS AND SOFTWARE. WE OPERATE THE ACORN TEACHER AND ACADEMIC SCHEMES FOR TRAINING AND FINANCE. PLEASE TELEPHONE !





0457 865953   0457 869917

ACORNSOFT

Desk Top Publisher (A)	£119.20
Lisp (BMC)	£16.10
Logistix (A)	£89.10
Micros in Business (BMC)	£34.75
Twin (A)	£26.10
View 3.0 (B)	£41.60
View Index (BMC)	£10.40
View Plot (BMC)	£20.83
View Professional (BMC)	£55.51
View Sheet (BMC)	£41.60

COMPUTER CONCEPTS

Inter-Base (BMC)	£48.00
Inter-Chart (BMC)	£25.60
Inter-Sheet (BMC)	£39.20
Inter-Word (BMC)	£39.20
Inter-Sheet (A)	£23.20
Inter-Word (A)	£23.20
Laser Direct Laser Printer	£949.05
Spell Master (BMC)	£41.03
Impression II (A)	£152.09
Impression Junior (A)	£80.95

CLARES MICRO SUPPLIES

Alpha Base (A)	£39.09
Artisan 2 (A)	£46.91
Toolkit (A)	£39.09
Interdictor 2 (A)	£27.35
Knowledge Organiser (A)	£46.91
Fontwise package (BMC)	£23.47

IMPACT SOFTWARE

The Real McCoy (A) Discs	£23.44
Man at Arms (A)	£15.62
Holed Out (A)	£15.62
Apocalypse (A)	£23.44
Nevyron (A)	£15.62
The Olympics (A)	£15.62

PRES

Adv. Control Panel (BMC)	£27.90
Adv. Disc Investigator (BMC)	£23.52
Adv. Disc Toolkit (BMC)	£27.90
Adv. File Manager (BMC)	£22.51

PRES Archi products all discounted !!

MINERVA SYSTEMS

System Delta+Card Index (BM)	£50.83
System Delta Plus (A)	£62.56
Atelier (A)	£78.22

DABS PRESS

Master Guide Book	£11.66
Viewstore/Sheet Book	£11.66
Archimedes DFS Disc	£23.44
"C" A Dabhand Guide	£13.45
Z88 A Dabhand Guide	£13.45
Archimedes Beginers Guide	£8.95

Autumn Clearance

Goupil Golf Laptop/Desk PC 1meg 286
40meg H/disc VGA ..... Retail £3500.00
SAVE £2300.00....... ***SALE Price £1200.00***

Amstrad PC2086HD 12" VGA colour
30meg H/disc .... Retail £899.00
SAVE £200.00 .... ***SALE Price £699.00***

Amstrad PC2086SD Mono monitor
3.5" Floppy Drive .... Retail £499.00
SAVE £50.00 .... ***SALE Price £449.00***

Western Digital 30meg H/Card £249.00
SAVE £50.00 ...... ***SALE Price £199.00***

This advert contains just a few of the items we have Please telephone or send a SAE for our FULL price lists

PRICES MARKED # ARE CHEQUE or CASH ONLY NO CREDIT CARDS

We specialise in "Trading In" and buying Used Hardware & Software

Post and Packing Charges
£1.00 for small, £2.45 for medium items. Expensive products £9.00 for courier

COMPUTECK Ltd.

Dinting Lane Industrial Estate
Glossop
Derbyshire SK13 9NU
Visa-Master-Lombard Cards

USED STOCK SELECTION from COMPUTECK Ltd.

COMPUTERS & HARDWARE

Acorn	BBC B DFS Series 3/4 1770/8271	170.00
Acorn	BBC B DFS Series 7 1770/8271	200.00
Acorn	BBC B+128 Computer	256.52
Acorn	Master 128	250.00
Acorn	Master 512 Board	149.00
Acorn	Master Turbo Board	70.00
Misc.	Z80 Second Processor	90.00
Misc.	Quadram Multiscan 14	225.00
Misc.	Zenith Amber Screen	40.00
Epson	LQ/LX400 Cut Sheet Feeder	50.00
Epson	LX80 Dot Matrix Printer	85.00
Misc.	Brother HR40 Daisy Wide Carr.	346.96
Cumana	S/Drive 40/80 5.25	80.00
Misc.	Dual D/drive 40/80T no PSU	130.00
Misc.	Dual Drive 80T no PSU	120.87
PRES	Hard Disc 20 meg A3000	295.00
Watford	Dual Drive 80T no PSU	120.87
A M S	AMX Mouse	20.00
A M S	Mouse (C)	20.00
Acorn	Master Econet Module	30.00
Acorn	Master ROM Cartridge	8.00
Acorn	Prestel Adaptor (BM)	40.00
Acorn	Teletext Adaptor	40.00
Beebug	Serial Link to BBC (A) Disc	12.00
Misc.	8K SRAM Module	12.00
Misc.	Atari Trackerball (BM)	25.00
Misc.	Chroma 250 Genlock Wild/Vision	295.00
Misc.	Marconi Tracker Ball (BM)	25.00
Misc.	Printer Sharer 6 Comps to 1 Pr	160.00
Misc.	Prism Modem 2000 in Software	60.00
Misc.	PSU for BBC Disc Drive	20.00
Misc.	Terrel printer Sharer Box	23.00
Misc.	Timer Kit	8.00
Misc	Timewarp RTC Technomatic (B)	13.87
Misc.	Twin Joysticks	7.74
Misc.	Zip stick Joystick (B)	8.00
Morley	3.5 Second Drive A3000	95.00
Morley	Care dual 2 x 16K cartridge	8.00
Morley	Quad Cartridge 4 x 16k	10.00
Nidd Vall	Anamouse (BM)	20.00
Nidd Vall	Digimouse	20.00
P M S	Second Processor 6502	60.00
PRES	System Housing A3000	49.00
Vigen	Cartridge System for BBC B	13.00
Vigen	Cartridge System Master 128	10.00
Vigen	Cartridges for ROMs	3.00
Vine	ROM Board 3 (M)	10.00
Watford	128k ROM /RAM Card Bat Back	69.00
Watford	16K Disc RAM Board (B)	20.00
Watford	Adder Eprom Blower	39.00
Watford	Beeb Video Digitiser	60.00
Watford	Quest Mouse	20.00
Watford	Solderless ROM/RAM Board (B)	25.00

BOOKS

Acorn	Advanced User Guide BBC	10.00
Acorn	Ref Manual Part 1 (M)	10.00
Acorn	Ref Manual Part 2 (M)	10.00
Acornsoft	View Ref Manual	6.00
BBC Pubs	Toolbox 2 and tape	5.00
Dabs Pres	Master 512 Guide and Disc	8.00
Dabs Pres	Master OS Dabhand Guide	8.00
Dabs Pres	View Dabhand Guide	8.00
Misc.	30 Basic Spectrum	3.00
Misc.	6502 Ass Lang Progmg/Leventhal	12.00
Misc.	Adv'd Sideways RAM/ B Smith	7.00
Misc.	Assembly Lang Prog I Birnbaum	4.00
Misc.	BBC Ass. Lang Bruce Smith	4.00
Misc.	BBC Assembler Workshop B Smith	4.00
Misc.	Century Programming Course	4.00
Misc.	Data Processing/Hardwr & Progm	0.00
Misc.	Disk Systems for BBC I Sinclair	3.00
Misc.	Mastering DOS Plus for 512	6.00
Misc.	Pascal Prgramming Huggins	3.00
Misc	Progmng with Graphics/Marshall	3.00
Misc.	The Book of Listings/BBC Publ	2.00

SERIOUS SOFTWARE

A M S	AMX Super Art (M) Disc	25.00
A M S	Extra! Extra! (BM) Disc	12.00
A M S	Max (B) ROM	10.00
A M S	Stop Press Discs (M)	25.00
A M S	Super Art (C) Disc	25.00
A M S	Utilites (BM) Disc	7.00
Acorn	PC Emulator (A) Discs	60.00
Acorn User	Calligraphy (B) Disc	3.00
Acorn User	Gallery Disc (B) 2xDisc	6.00
Acornsoft	Basic Editor (BMC) ROM	15.00
Acornsoft	BCPL ROM (B)	31.31
Acornsoft	Desk Top Publisher (A) Disc	49.00
Acornsoft	GXR Rom (B) ROM/Tape	16.00
Acornsoft	Hi - View (B) Disc	22.00
Acornsoft	ISO Pascal (BM) ROMs	60.00
Acornsoft	Logistix (A) Disc	60.00
Acornsoft	Printer Driver Gen. (BM) Disc	6.00
Acornsoft	View Spell (BM) ROM & Disc	21.74
Acornsoft	View Store (BMC) ROM	30.00
Acornsoft	Viewsheet (BMC) ROM	30.00
Acornsoft	Workshop (B) Disc	6.00
BBC Pubs	Drawing (B) Tape	3.39
BBC Pubs	VU-Type (B) Tape	6.00
Beebug	C Lang (BM) 2xROMs	30.43
Beebug	C Stand Alone Gerator	12.00
Beebug	Design (B) Disc	10.00
Beebug	DFS Reader (A) Disc	7.00
Beebug	Discmaster (B) Disc	6.00
Beebug	Help (ROM) (B)	10.00
Beebug	Masterfile II (B) Disc	12.00
Beebug	Masterfile II (C) Disc	12.00
Beebug	Paintbox (B) Disc	8.00
Beebug	Printwise (BM) Disc	15.00
Beebug	Quickcalc (B) Disc	8.00
Beebug	Quickcalc (C) Disc	8.00
Beebug	Sleuth (B) ROM	18.00
Beebug	Teletext (B) Tape	3.50
Beebug	Teletext Pack (B) Disc	7.00
Beebug	Toolkit (B) ROM	12.00
Beebug	Toolkit Plus (B) ROM	18.00
Beebug	Vocab Tester (B) Tape	8.00
Clares	Artroom (C) Disc	15.00
Clares	Artroom (M) Disc	12.00
Clares	Artroom (M) Disc	15.00
Clares	Beta Base Utils (B) Disc	6.00
Clares	Font Editor (C) Disc	6.00
Clares	Fontwise + (C) Disc	8.70
Clares	Render Bender (A) Disc	39.00
Comp Con	Disc Doctor (B) ROM	15.00
Comp Con	Graphics (BM) ROM	15.00
Comp Con	Gremlin (B) ROM	15.00
Comp Con	Inter-Sheet (BMC) ROM	30.00
Comp Con	Printmaster (BMC) ROM	15.00
Comp Con	Wordwise Plus (BM) ROM	26.09
Dabs Pres	C Program Disc	4.00
Dabs Pres	Hyperdriver (C) Disc	12.00
Dabs Pres	MOS Plus (M) ROM	7.00
Database	Fontstyle + Fonts (B) Disc	9.00
Database	Fun School 2 6-8 (BM) Disc	7.00
Database	Mini Office (B) Disc	4.00
Database	Mini Office II (B) Disc 80t	8.00
Minerva	Gamma Plot (A) Disc	40.00
Minerva	Inter/View Link (C) Disc	10.00
Minerva	Mail Shot Application (C) Disc	10.00
Minerva	Sales Ledger (BM) Disc	26.04
Minerva	Stock Management (C) Disc	26.04
Mirror	Admin Extra (B) Disc	7.00
Mirror	Fleet Street Editor (B) Disc	25.00
Mirror	Fleet Street Editor (C) Disc	25.00
Mirror	Fonts & Graphics (B) Disc	10.00
Mirror	Psychic Powers PSI-Q (B) Disc	6.00
Mirror	Strike Force Harrier (B) Disc	6.00
Misc.	1st Word Study Guide (A) Disc	10.00
Misc.	3D Logo (C) Disc	12.00
Misc.	ADE+ (M) 2xROM	30.00
Misc.	AIDS II by Soft Smith	8.65
Misc.	Archway (A) Disc	60.00
Misc.	Bert Boot Maths 8-12 (C) Disc	10.00
Misc.	Busicalc (BM) Disc/Supersoft	8.65
Misc.	Control Logo (C) Disc	12.00
Misc.	Creation Discs (A) EMR 6xDiscs	26.04
Misc.	Diagram (B) Disc Pineapple	21.70
Misc.	Fontaid (B) ROM & Disc CJE	15.00
Misc.	Gemini Combo Pack (B) Disc	12.00
Misc.	Graph Builder (BM) Disc	10.00
Misc.	Graphics Pack (B) Tape Salaman	3.00
Misc.	Icon Art Master (BM) Disc	12.00
Misc.	Image by Cambridge (B) Disc	15.00
Misc.	Insant Recall D/base (B) tape	6.00
Misc.	Invoicing (B) Disc	10.00
Misc.	Keywords (B) Disc	12.00
Misc.	Logo Extension (C) Disc	7.78
Misc.	Maths Age 4-14 (C) Disc	15.00
Misc.	Merlin Database/Scribe (B) ROM	17.34
Misc.	Micro Maths GCSE (C) Disc	15.00
Misc.	Music Collection (B) Disc	8.00
Misc.	Music Logo (C) Disc	12.00
Misc.	Pixel Perfect DTP (BM) Discs	26.04
Misc.	Pixel Perfect Maths Pack (B)	10.00
Misc.	Record Keeper (B) Tape	4.00
Misc.	Science & Technology (B) Disc	12.00
Misc.	ScreenPrint (B) ROM	10.00
Misc.	Share Anal -Synergy (B) Disc	26.04
Misc.	Slave + ROM (B)	20.00
Misc.	Space Mission Nada (C) Disc	10.00
Misc.	Spanish level B (BM) Disc	10.00
Misc.	Spy (B) ROM	12.00
Misc.	Star Stick (B) ROM	10.00
Misc.	Vistax-Viewdata (B) ROM	20.00
Misc.	Vu-Calc (Psion) (B) Tape	8.00
Misc.	VU-File (B) Tape	10.00
Misc.	Wizards Adventr (C) Disc	10.00
Misc.	Xmas Carols (A) EMR Disc	4.30
Misc.	ZOOM Mach. Code Monitor (B)	10.00
Nidd Vall	Chauffeur (B)	8.00
Nidd Vall	Illustrator DTP (BM) Disc	15.00
Nidd Vall	Illustrator Paintbox (C) Disc	10.00
Oak	Parametric Design Tool (A)	169.57
P M S	Genie Junior (M) Disc	12.00
P M S	Genie Utils (BM) Disc	4.00
P M S	The Publisher (C) ROM + fonts	29.95
Pace	Micronet Terminal (B) ROM	8.00
PRES	Advnc'd 1770 DFS (B) ROM	20.00
Superior	Speech! (C) Disc	8.00
Watford	Beebmon (B) ROM	20.00
Watford	Colour Art (B) Disc	6 00
Watford	ConQuest	18.00
Watford	Daignostic Disc (B) Disc	10.00
Watford	Dumpout 3	12.00
Watford	NLQ Designer (BM) ROM	12.00
Watford	Quest Paint (BM) ROM	20.00
Watford	View Printer Driver ROM	25.00
Watford	Wapping Art Disc (BM) Disc	9.00
Watford	Wapping Fonts 1&2 (BM) Disc	12.00

GAMES

Acorn User	Games Disc (B) Disc	6.00
Acornsoft	Elite (B) Disc	7.00
Acornsoft	Elite (C) Disc	7.00
Acornsoft	Hits Vol 1 (C) Disc	7.00
Acornsoft	Hits Vol 2 (C) Disc	7.00
Acornsoft	Revs 4 Tracks (B) Disc	4.00
Bug Byte	Compilation II (B) Disc	6.00
Domark	Licence to Kill (B) Disc	6.00
Domark	Not a Penny More (B) Disc/Book	6.00
Domark	Star Wars (B) Disc	4.00
Domark	Trivial Pusuit (B) Disc	6.00
Impact	Cheat Again 3 (B) Disc	3.00
Impact	Cheat Again Vol 2 (BM) Disc	3.00
Impact	Chocks Away (A) Disc	15.00
Impact	Clogger (C) Disc	5.00
Impact	Holed Out (BM) Disc	8.65
Impact	Holed Out (C) Disc	8.00
Impact	Nevryon (BM) Disc	7.00
Impact	Nevryon (C) Disc	8.00
Impact	Olympics (A) Disc	10.00
Impact	U.I.M. (A) Disc	13.00
Impact	White Magic (BM) Disc	6.00
Impact	Zenon (BM) Disc	3.00
Impact	Zenon (C) Disc	5.00
Incentive	Moon Cresta (B) Disc	6.00
Leisure G	Monopoly (B) Disc	6.00
Mandarin	Lancelot (BM) Disc	6.00
Melborne	The Hobbit (B) Disc	6.00
Melborne	Way of the Expl Fist (B) Disc	6.00
Micro Pow	Killer Gorilla (B) Disc	6.00
Micro Pow	Magic 10 Hits (C) Disc	4.00
Minerva	Minotaur (A) Disc	7.83
Misc.	Blood of Mutineers (BM) Disc	6.00
Misc.	Computer Crosswords (M) Disc	6.00
Misc.	Despatch Rider (BM) Disc ASL	4.00
Misc.	Egyptian Adventure (BM) Disc	6.00
Misc.	Fortress (B) Disc	6.00
Misc.	Jump Jet (B) Disc	6.00
Misc.	Karkout (B) Disc	6.00
Misc.	Kourtyard (B) Disc	4.00
Misc.	Omega Orb (BM) Disc ASL	4.00
Misc.	Rotor by Arcana (A) disc	10.00
Misc.	Skirmish (C) Disc	6.00
Misc.	Smash 7 Hits	6.00
Misc.	Uridium (B) Disc	6.00
Misc.	Village lost Souls (B) Disc	6.00
Misc.	XOR (BM) Disc	6.00
Superior	Around World (BM) Disc	4.00
Superior	Barbarian II (BM) Disc	6.00
Superior	Collection Vol 1 (BM) Disc	6.00
Superior	Collection Vol 1 (C) Disc	6.00
Superior	Collection Vol 2 (BM) Disc	6.00
Superior	Collection Vol 2 (C) Disc	6.00
Superior	Conqueror (A) Disc	14.00
Superior	Exile (BM) Disc	8.00
Superior	Exile (C) Disc	9.00
Superior	Grand Prix Con Set (BM) Disc	4.00
Superior	Hostages (C) Disc	7.00
Superior	Last Ninja (BM) Disc	6.00
Superior	Life of Repton (BM) Disc	4.00
Superior	Ninja 2 (BM) Disc	6.00
Superior	Palace of Magic (BM) Disc	4.00
Superior	Palace of Magic (C) Disc	7.00
Superior	Perplexity (C) Disc	7.00

(B) BBC B (M) Master 128 (C) Compact (A) Archimedes

THE SMALL PRINT

With computers getting smaller, **GEOFF BAINS** looks at a range of diminutive printers designed to help you print on the move

Portable micros are rapidly increasing in popularity and of late printers have also shrunk to tiny proportions while retaining a staggering performance. However, there are still only a limited number of truly portable printers able to make the most of the output from an Archimedes. Here we look at seven of the latest models. They vary in size, weight, price and performance, but all will provide text and graphics for an Archimedes on the move.

CANON BJ-10e

The BJ-10e uses bubblejet technology, giving a very high resolution of 360dpi (dots per inch). The print is deep black and even, and as such is difficult to tell from that of the best laser printers, although large areas of black can take a long time to dry and are prone to smudging.



BJ-10e: HIGH QUALITY

The BJ-10e weighs under 2kg and takes up little more room than a sizeable wad of printer paper. It is nearly silent and consumes little power; a mains power supply is provided and the battery pack, which is £40 extra, is good for about 40 pages of printing.

The one drawback is its speed. In NLQ mode the BJ-10e manages a reasonable 43cps (characters per second), but the speed in draft mode – the mode that saves on the ink – is exactly the same.

The BJ-10e is only compatible with the IBM Proprinter. Many of the PrinterDM driver modes will cope with this but they won't make the most of the printer's capabilities when it comes to graphics.

Push buttons enable you to select between the print modes and the three character sizes available but the selection is signalled only by hard-to-recognise sequences of beeps when the button is pushed.

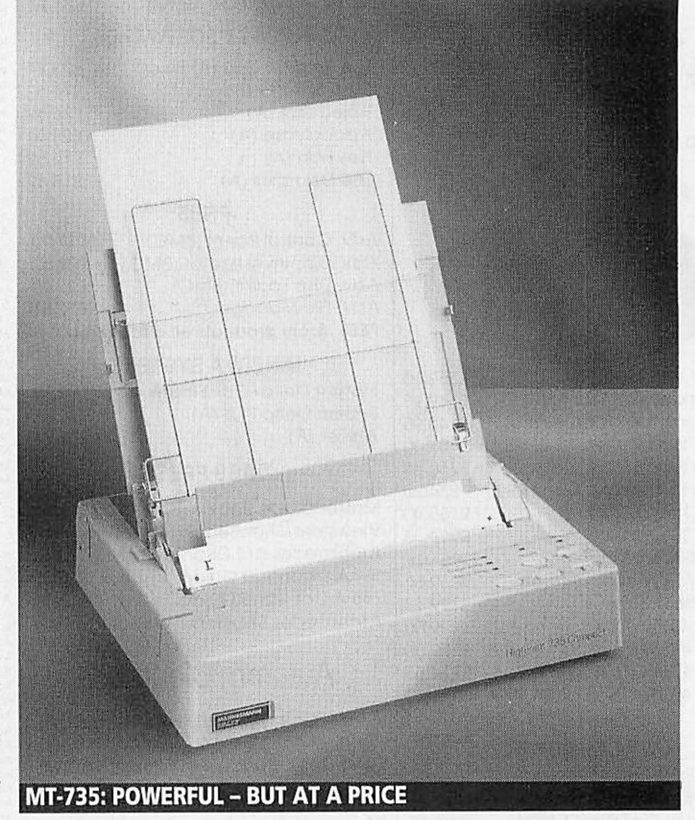
The printer can be used flat, or on its end when sheets are fed in from the base of the machine. In this position a £54 optional sheet feeder is clipped to the printer. It only holds 30 sheets, but loads them automatically. The sheet feeder is not really portable and is supposed to make the BJ-10e double as a desktop printer.

However, on the move, if fast printing is not essential, the high quality output will find the BJ-10e many friends.

MANNESMANN TALLY MT-735

It doesn't look impressive but the MT-735 is well worth its relatively high price. It is heavy but compact, and has the same dimensions as A4 paper and is only a couple of inches high.

This thermal transfer printer has a printhead which stretches right across the paper; the ribbon is a sheet of black film which unwinds past the printhead. New ribbons are quite tricky to fit and, since the whole width of the paper is very rarely used, they are rather wasted.



MT-735: POWERFUL – BUT AT A PRICE

The built-in rechargeable batteries last for 80 pages of print and take about eight hours to charge up. Only cut sheet paper can be used, fed in by hand or from the 50-sheet bulk sheet feeder formed from the unfolded top panel.

Like most personal laser printers the MT-735 prints at 300 dpi. The results are almost as good, although large areas of black can be a bit dusty.

The text is printed in a range of sizes in one serif font. In HP mode there's also a choice of two other proportionally-spaced fonts. As four emulations are provided; the Epson LQ, IBM Proprinter, Hewlett-Packard Laserjet and the similar Deskjet, an Archimedes can really make the most of this printer.

Since the MT-735 is a page printer – each sheet of paper is printed in one go, once it has been 'assembled' inside the printer – it seems rather slow. But once the actual printing starts, it is speedy.

The MT-735 can produce typical text pages at the rate of about 4.5 per minute which is definitely laser printer speed. The Copy key repeats the last page as often as needed.

Although expensive, the MT-735 produces excellent print with flexibility, quality and speed approaching that of a laser printer, at two thirds of the price and in one-twentieth of the space.

FERROTEC H200

The Ferrotec H200 relies on a printing module made by Toshiba for fax machines. A strip of over 1500 tiny heating elements across the page darkens special heat-sensitive fax paper.

Although the H200 is small, the separate mains transformer or £45 battery pack is external, taking up more room and weight. However, paper is stored inside the machine, saving space. Fax paper is used on a roll. It's not as neat as cut sheets but new rolls simply drop into position. It's expensive at about 4p a sheet, but the H200 is one of the cheaper machines to run since neither ink nor ribbon is needed.

The H200 can print text in two qualities roughly equivalent to the NLQ print from nine-pin and 24-pin dot-matrix printers. The lower quality draft print is dark, even and extremely legible. The NLQ print is dark and crisp, and although characters still look rather dotty the unattractive shiny paper ensures that this printer will rarely be used for quality letters. Although two character styles are provided, these are remarkably similar.


FERROTEC: A BIT DOTTY

The H200 is reasonably fast and can print an A4 page of text in about 30 seconds in NLQ mode and 20 seconds in draft mode. It is compatible with IBM's Proprinter and the less capable Epson FX codes. Because of the dark and even printing, the H200 is capable of excellent graphics, although at limited resolutions.

The H200 is yesterday's printer. Although it is fast, reasonably small and good at printing graphics, it is capable of only reasonable print quality, uses unattractive paper and at £350 is overpriced.


CITIZEN PN48 TRADES SPEED FOR PORTABILITY

CITIZEN PN48

This is a truly tiny printer, and a remarkable performer. It is only 12 inches long and just a couple of inches thick and high but this small package contains a thermal printhead, and enough battery power to print 30 pages. A separate battery charger and mains supply is included.

The PN48 is so small there is no room for a regular-sized interface connector and so a minature version is fitted. This requires a special, short printer lead which is supplied with the printer. Despite its size, the print quality from this machine is excellent and a thermal ribbon cassette produces text at 360dpi. Not only is the text crisp and dark but graphics images can be printed out in high quality too.

The ribbon is somewhat expensive. Two versions are available, each for £3.50. The single-strike type produces the best print but lasts for only 25 pages whereas multi-strike ribbons last for a more reasonable 100 pages.

There's no fast draft mode, only the high quality NLQ, in two rather similar fonts. However, the biggest drawback is this machine's speed of printing – the PN48 manages just 24cps, or over 90 seconds per page.

The PN48 handles only cut sheet paper and this is fed into the machine one sheet at a time. Paper is automatically fed into the machine as soon as it is introduced into the slot.

The PN48 is flexible enough. It offers Citizen's own codes, Epson LQ and IBM Proprinter, as well as partial NEC emulation for high resolution graphics. Risc OS printer drivers can produce fine quality text and graphics from this machine.

When batteries are taken into consideration, this is the smallest and lightest printer tested. Although the PN48 is not suitable where speed is paramount, the print quality and flexibility ensure that the PN48 will be much sought after by Archimedes users on the move.

TOSHIBA EXPRESSWRITER 201

Like the PN48, the 201 is tiny but uses a large, optional battery pack. This bolts onto the base and lasts for 60 pages. The 201 also has no room for a standard interface socket and a different, miniature connector is used. The special lead required is included.

The print quality is not as good as the PN48's and the 201 is even slower. This model does not have automatic paper loading but it does include a paper wind knob which is just as efficient. The 201 also lacks the status display and menu system of the PN48. All set-up parameters are set with fiddly dip switches located inside the machine. Only Epson LQ compatibility is provided but Archimedes users will find that this is quite adequate.

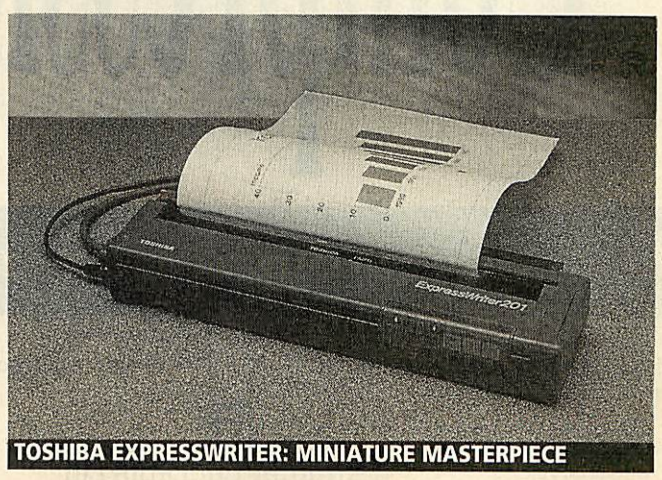
If it wasn't for the advent of the Citizen PN48, the 201 would be heralded as a masterpiece of miniaturisation. However, it does fall behind its rival in many areas and, with the battery pack selling at £46, it costs more to boot.

KODAK DICONIX 150+

This was one of the first truly portable printers. It is only as big as a hardback novel and it weighs a trim 1.7kg. A particularly clever space-saving feature keeps the five C-size batteries inside the paper roller. The Diconix is an inkjet printer but with just 12 ink nozzles, it gives a print quality similar to cheap nine-pin dot-matrix printers.

There are three print modes. Draft print is pretty awful and only suitable for quick rough copies. The NLQ mode is better than draft but still not suitable for letters. There is also a quality mode. This is an improvement, but the characters are still clearly made up of dots. In no mode is the Diconix a substitute for a 24-pin or even a reasonable nine-pin printer.

The Diconix is also not a particularly fast printer. It can manage a reasonable 96cps in



TOSHIBA EXPRESSWRITER: MINIATURE MASTERPIECE

Double your disc capacity

for under £60

A new utility that provides completely transparent file compression and decompression. Compatible with ADFS, SCSIFS, IDEFS, and NFS allowing all file operations to occur as normal, except that it compresses the data as it is written to disc, and decompresses it again when read back. It uses LZW adaptive compression that adapts itself to the type of data so that, on average, this can achieve compression of 2 or 3 to one for most types of data - in other words, you can fit twice as much data on your disc, hard or floppy, as you would normally!

And unlike any other compression utilities it's lightning fast and works exactly like all other filing systems and is compatible with all application programs.

adfs::Floppy2.$

!JunSpec1			Application
ATextFile	WR/	59K	Text

CFS#adfs::Floppy1.$

!JunSpec1			Application
ATextFile	WR/	59K	Text
DRAWING	WR/	121K	Sprite
GPB	WR/	106K	BASIC
GradTint1	WR/	24K	DrawFile
HEALEY	WR/	121K	Sprite
HomeAccnt	WR/	9K	Sheet
Inventions	WR/	165K	Jnr Data
LESLEY	WR/	121K	Sprite
screen	WR/	154K	Sprite
Spitfire	WR/	35K	DrawFile
Style	WR/	142K	BASIC
Title	WR/	60K	DrawFile
Tutor	WR/	28K	Sheet
View2	WR/	160K	Sprite

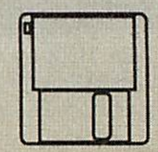
The floppy disc on the left holds 2 files totalling 757,502 bytes. Using Compression, the floppy disc on the right holds 15 files totalling 2,032,669 bytes.



The file compression utility for the Archimedes

At only £49 + VAT (£57.57 inc) it's almost too good to be true!



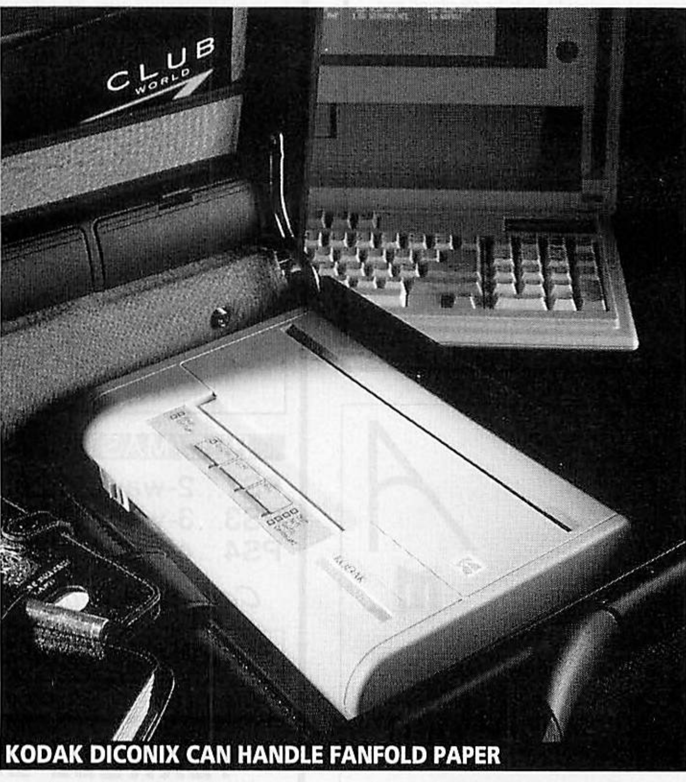


Computer Concepts Ltd
Gaddesden Place, Hemel Hempstead, Herts, HP2 6EX.
Tel.: 0442 63933 Fax.: 0442 231632

draft mode and 21cps in quality mode, and therefore takes nearly two minutes to print a typical page of text.

Unusually, the Diconix can use fanfold paper as well as cut sheets. However, no automatic paper loading is provided and actually getting paper into the printer is a fiddly business as there is no paper wind knob. The ink reservoir includes the printhead nozzles and the whole unit is replaced when the ink runs dry, which happens after 500 pages or so.

The Diconix is compatible with IBM Proprinter and Epson FX codes. Again, this means that with an Archimedes, graphics are not up to much. However, the relatively poor quality print from this printer does not detract from the fact that it is genuinely portable and the only battery-operated printer which can print on fanfold paper.



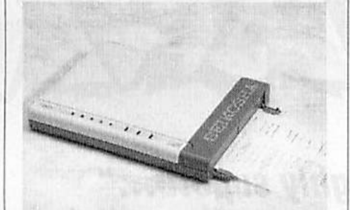
KODAK DICONIX CAN HANDLE FANFOLD PAPER

SEIKOSHA LT-20

This portable printer breaks all the rules. It is an impact printer, like any desktop dot-matrix machine, but smaller. The advantage of an impact printer is that it can print multi-part forms or carbon copies while inkjet and thermal machines can't. It's also cheap to run.

However, as a dot-matrix machine, the LT-20 consumes lots of power and really requires mains. Nevertheless, a battery pack can be fitted, costing a hefty £102 extra, but it does last for 100 pages on each charge. Paper is held in a 50-sheet tray but is rather fiddly to load.

The LT-20 can produce NLQ print in nine fonts, covering everything from plain Helvetica to fancy Script, and the print quality is good enough for reports and letters. However, it is noisy and not particularly fast. Draft characters are produced at only 62 cps, taking around 45 seconds to print a typical page. NLQ is printed at 33 cps, which is around 90 secs per page.


LT-20 BREAKS THE RULES

Only IBM Proprinter emulation is provided, limiting its use for graphics. Manual control is also possible. However, selecting the character style requires remembering a mind-boggling number of flashing light sequences.

The LT-20 is the first attempt at a genuinely portable impact dot-matrix printer but, for portable use, it really does cost far more than its performance justifies.

CONCLUSION

Of these seven machines, two stand-out well above the rest. For an incredible degree of true portability, combined with excellent quality print and graphics, although it is slow, the Citizen PN48 shows just what performance can be squeezed into the tiniest space.

Somewhat less portable, mainly due to its weight, but immensely capable and flexible, is the Mannesmann Tally MT-735. Although this is an expensive printer to buy and to run, it is capable of handling anything an Archimedes can throw at it, both on a desktop and on the move, and in the long run proves excellent value. The MT-735 is a truly remarkable machine.

SUPPLIER DETAILS

Canon BJ-10e
Tel: 081-773 3173
Mannesmann Tally MT-735
Tel: (0734) 788711
Ferrotec H200
Tel: (010) 3531-952529
Citizen PN48
Tel: (0895) 272621
Toshiba Expresswriter 201
Tel: (0932) 841600
Kodak Diconix 150 Plus
Tel: (0442) 61122
Seikosha LT-20
Tel: (0753) 682036

Make and model	Price (exVAT)	Extra for battery	Claimed speed Draft	NLQ	Average speed Draft	NLQ	Emulations	Size (wxdxh mm)	Weight	Battery life	Ink/paper cost
Canon BJ-10e	£350	£40	83	83	43	43	Pro	310x217x48	1.8kg	40 pages	11p
Citizen PN48	£325	–	–	53	–	24	LQ, Pro, NEC, Citizen	297x90x50	1.2kg	30 pages	14p
Ferrotec H200	£350	£45	200	170	164	119	FX, Pro	310x125x65	1.9kg	40 pages	4p
Kodak Diconix 150+	£345	£15	145	29	96	21	FX, Pro	273x165x52	1.7kg	40 pages	2.5p
Mannesmann Tally MT-735	£749	–	–	*250	–	*188	LQ, Pro, HP	287x218x60	3.8kg	80 pages	6.3p
Seikosha LT20	£369	£102	120	50	62	35	Pro	373x289x53	2.7kg	100 pages	2p
Toshiba 201	£325	£46	–	53	–	17	LQ	303x80x65	1.9kg	60 pages	17p

* CPS speeds have limited meaning with a page printer



GAMES

SUPPLEMENT

THE TOP SCORE

FROM SHOOT-EM-UPS TO ADVENTURES – OUR TOP 20 GAMES

MEGAGAMES

ANUBUS, KARMA AND ELITE – THE SHAPE OF GAMES TO COME?

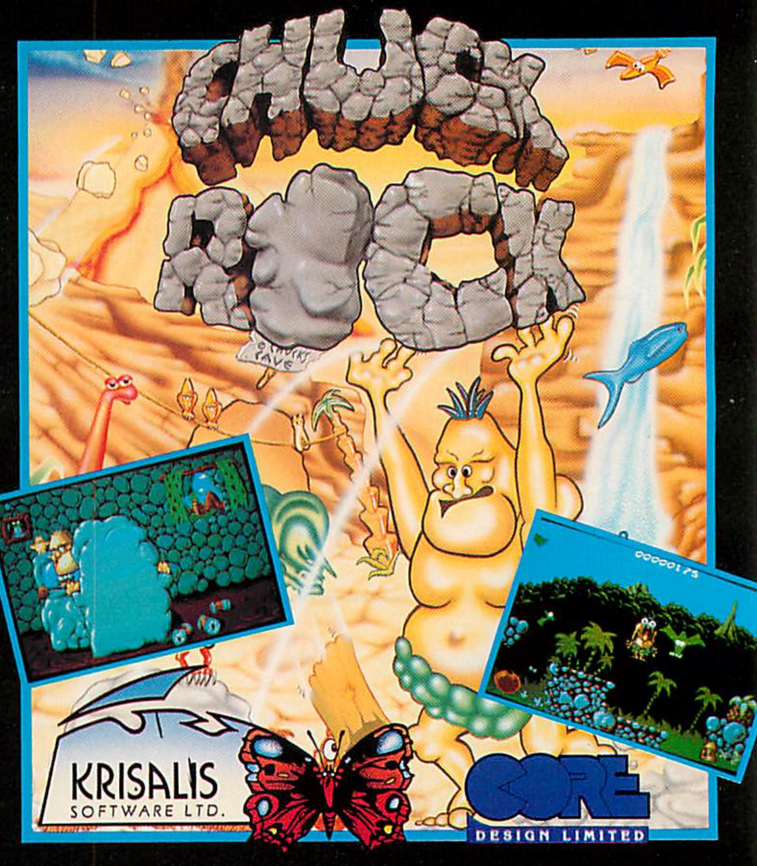
WIN A FJORD SIESTA

ENTER OUR COMPETITION AND WIN A WEEKEND IN NORWAY

FREE WITH BBC ACORN USER MAGAZINE



Voted the software industrie's Game of the Year. "Lemmings" by Psygnosis has to be one of the most playable games ever to be released on the unsuspecting public. "Lemmings" the hit title of 1991, now available from Krisalis for the Archimedes and BBC A3000 price £25.99.



From the moment you watch "Chuck Rock's" introduction sequence you know that this product is going to be a bit special. This is why "Chuck Rock" has been licensed by both Sega and Nintendo publishers. All of Core Design's Amiga originality has been retained including the parolex scroll, brought to you by Krisalis for the Archimedes and BBC A3000 price £25.99.



"Manchester United Europe," takes this world famous club into the European arena of club knockout competitions, which includes the European Cup, European Cup Winners Cup, UEFA Cup, European Super Cup and the World Club Championship held each year in Japan. Game features:- 2 player option (using joystick adapter) full goalkeeper control, name of player on the ball, new control method incorporating one touch football and aftertouch, animated substitutions, yellow and red cards, sending off, action replays, 170 club badges, penalty shoot outs, Arcade only option, Management only option or full simulation option. Available for the Archimedes and BBC A3000 price £25.99.



All games compatible with Archimedes & BBC A3000

3 great games making their debut appearance at the BBC Acorn User Show '91

Anyone not attending the show can obtain copies direct by sending a cheque or postal order to Krisalis Software or, telephone your order using your Access or Visa card. You can fax your order giving your credit card details which must include expiry date.

All orders will be dispatched by the 11 October '91 by first class post. Carriage is paid by us in the UK. (Overseas orders add £3.00)

Krisalis Software Ltd., Teque House, Masons Yard, Downs Row, Moorgate, Rotherham, S60 2HD.
Telephone 0709 372290. Fax 0709 368403

CONTENTS

Editor Barry Monk
Assistant Editor Karen Donaghay
Supplement Co-ordinator Sam Greenhill
Technical Assistant Paul James
Art Editor Tony Judge
Editorial Assistant Sharon Halpern
Advertisement Manager Duncan Pringle
Senior Sales Executive Richard Power
Sales Executive Jack Manzoor
Ad Production Fiona Andrews
Production Manager Jennifer Jeffrey
Publisher Seamus Geoghegan
Publishing Director Michael Potter
Editorial Director Christopher Ward

ILLUSTRATIONS BY
MATTHEW RICHARDSON

Published by Redwood Publishing, a BBC Enterprises Company, 20-26 Brunswick Place, London N1 6DJ. Tel: 071-490 1444. Telecom Gold 10081:RED001, Micronet 919992492. Bureau setting and ad typesetting by Bold Gray Design, 52 Rosebery Avenue, London, EC1R 4RP. Colour by Trumps Studio, Ware, Herts. Printed by Riverside Press, St Ives PLC, Gillingham. Distributed by BBC Frontline, Park House, 117 Park Road, Peterborough. Redwood Publishing is a registered data user. ISSN 0263 7456.

ABC
Member of the Audit Bureau of Circulation

THE HOUSE OF GAMES

The people who use Acorn computers fall into many a category. From the executive in the office to the teacher in the school; from the student in the college to the librarian behind the desk; and from the accountant in the city to the sorry blighter in the study who didn't use the accountant in the city; and all their children too. Yet for all their diversity the odds favour most, if not all, of these people playing computer games at one time or another, and it"s not true that the older you are the less you play. If there is one question above all that is frequently asked, by members of practically every category, it is this... which games should I buy for my Acorn computer?

The purpose of this games supplement is to answer that question. Sometimes it is asked by people who have just purchased their new machine and know nothing about the Acorn games world, other times by old hacks who want the low-down on the latest releases. No matter; the wisdom expressed in these pages is applicable to everyone who is interested in games.

The reason for producing the supplement now, four years after the Acorn Archimedes was launched, is that it is arguably only this year that good quality games are beginning to emerge.

This Christmas the tide has turned, the winds of change are upon us and someone's written a good game. Several in fact. At least ten games worthy of the machine are due to be released before Santa's deadline this year.

Part of the reason for this sudden increase is that with over 130,000 32-bit Acorn machines now in the market place, it has become viable for software companies normally specialising in computers such as the 16-bit Amiga to start devoting a bit of time to producing games for the Acorn range. Krisalis Software is the most obvious example in this respect, and it has recognised the fact that Acorn games tend to sell over a long period of time.

If an Amiga game doesn't sell 10,000 copies in the first week, then nobody really wants to know, because Amiga games only last about a month, whereas Acorn games have an indefinite shelf life, even if the sales per week are only somewhere between 50 and 150. Publisher Clares claims that its flight simulator *Interdictor 2* has sold more than 8,000 copies since its release last autumn.

The Fourth Dimension, which is probably the 'longest serving' producer of games for the 32-bit range, is now a reasonably large company with a considerable turnover. In producing mainly very good games it has managed to virtually create, and subsequently maintain, a stable games market that is ever-increasing in magnitude and importance.

The result is that there is now a fairly solid base on which to build a thriving games market. That such a base has been constructed largely during a great British economic recession is a good indicator that the future of the Acorn 32-bit range is going to be quite healthy with regard to entertainment software. And you can always catch the latest in our Game Show column – in *BBC Acorn User*.

Sam Greenhill

The Fourth Dimension

SPECIAL OFFER: If you buy 3 or more products directly from us you may deduct £10 from the total cost



Chopper Force (early version)



Enter The Realm



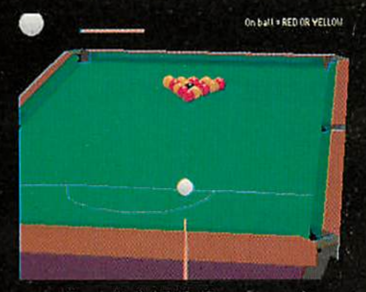
Saloon Cars



Pandora's Box



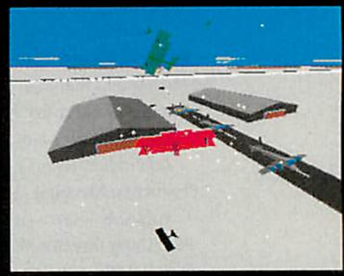
ARCtist



Break 147 & Superpool



Nevryon



Chocks Away Extra Missions

ACORN BBC A3000 & ARCHIMEDES SOFTWARE

The following software is compatible with the BBC A3000 and ALL Archimedes computers

ARCADE GAMES

Grievous Bodily 'ARM *(Hopefully late Nov.'91)*	24.95
Cataclysm *(Hopefully late November '91)*	24.95
X-Fire *(Hopefully mid November '91)*	24.95
Boogie Buggy *(Arcade Graphics & Gameplay)*	24.95
Nevryon *(Unbelievable Graphics & Gameplay)*	19.95
Inertia *(Isometric Arcade Action)*	19.95
Apocalypse *(3D Mega Game - 9 Planets)*	29.95
Drop Ship *(Superfast Arcade Action)*	19.95
Arcade Soccer *(World Cup 1-24 Players)*	19.95
The Olympics *(6 Varied Events - 1-6 Players)*	19.95
Quazer *(Furious Arcade Action)*	11.95

COMPILATIONS

The Real McCoy *(4 Game Compilation)* *(U.I.M., Arcade Soccer, White Magic & Quazer)*	29.95
The Real McCoy 2 *(4 Game Compilation)* *(Apocalypse, Holed Out, The Olympics & Inertia)*	29.95

3D SIMULATIONS/GAMES

Chopper Force *(Hopefully March '92)*	t.b.a.
Spitfire Fury *(Hopefully late November '91)*	24.95
Saloon Cars *(The Ultimate Driving"Game-ulation"!)*	24.95
Break 147 & Superpool *(Incredibly Realistic Snooker and Pool Simulator)*	24.95
Chocks Away *(Biplane Sim. for 1 or 2 Players)*	24.95
Chocks Away Extra Missions *(26 Extra Missions plus some Superb Enhancements)*	19.95
Chocks Away Compendium *(Chocks Away + Chocks Away Extra Missions)*	39.95
Powerband *(Superfast Formula 1 Grand Prix)*	24.95
E-Type Compendium *(3D Classic Car Racing)* *(E-Type + Extra 100 Miles + Designer)*	24.95
Holed Out Compendium *(3D Golf 1-6 players)* *(Holed Out + Extra Courses Vol.s 1 & 2 + Designer)*	24.95

GRAPHIC ADVENTURE

The Wimp Game *(Unique Graphic Adventure)*	19.95

EDUCATIONAL SOFTWARE
(from Triple 'R' Education)

Picture Book	19.95
Money Matters	19.95
Data Word	19.95
Target Maths	19.95
Converta-Key	19.95

ARCADE ADVENTURES

Pandora's Box *(Stunning Graphics & Gameplay)*	24.95
Enter The Realm *(Supersmooth Arcade Action)*	24.95
Pysanki *(Futuristic Arcade Adventure)*	19.95
Man-At-Arms *(Medieval Arcade Adventure)*	19.95
U.I.M. *(Massive 3D Action Adventure)*	29.95
White Magic *(Magical Arcade Adventure)*	19.95
White Magic 2 + Designer	19.95

SPEECH & ART SOFTWARE

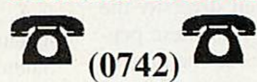
ARCtist *(Easy to use Professional Art Package)*	24.95
ARCticulate *(The Animated Speech Synthesizer)*	24.95

BBC MICRO, MASTER, COMPACT & ACORN ELECTRON

Title	BBC B & Electron Cassette	BBC B & Master 5¼" Disc	Master Compact 3½" Disc
Q-Master *(Realistic Pool Game)*	---	14.95	15.95
Picture Book *(Educational Software)*	12.95	14.95	15.95
Money Matters *(Educational Software)*	12.95	14.95	15.95
Data Word *(Educational Software)*	12.95	14.95	15.95
Target Maths *(Educational Software)*	12.95	14.95	15.95
Converta-Key *(Educational Software)*	12.95	14.95	15.95
E-Type *(3D Classic Car Racing)*	9.95	14.95	15.95
Nevryon *(Pure Arcade Action)*	---	14.95	15.95
Inertia *(Isometric Arcade Action)*	9.95	12.95	13.95
U.I.M. *(Massive 3D Action Adventure)*	---	19.95	21.95
Holed Out *(3D Golf for 1 to 4 Players)*	12.95	14.95	15.95
Holed Out Extra Courses Vol.1	9.95	11.95	12.95
Holed Out Extra Courses Vol.2	9.95	11.95	12.95
Arcade Soccer *(Fast Action - 1 or 2 Players)*	9.95	12.95	13.95
White Magic *(Magical Arcade Adventure)*	9.95	12.95	13.95
White Magic 2 + Designer	9.95	12.95	13.95
The Art Studio *(Easy to use Art Package)*	9.95	12.95	---

HOW TO ORDER

TELEPHONE




(0742)
769950 or 700661

ACCESS & VISA Accepted

24 Hour Service 7 Days a Week

SAME DAY DESPATCH

All orders are despatched immediately by 1st Class post. Carriage is paid by us in the U.K. (Overseas orders add £3 per product).

FULL DETAILS OF ALL OUR GAMES ARE AVAILABLE ON REQUEST & ARE SENT WITH ALL ORDERS

LETTER

Simply send us a quick letter telling us the software you require, your name and address, and payment via cheque, postal order or ACCESS or VISA card details.

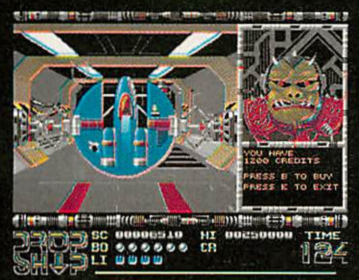
The Fourth Dimension,
1 Percy Street,
Sheffield, S3 8AU,
England.

NO Quibble GUARANTEE

If any of our discs ever become faulty (for whatever reason) we will replace them free of charge immediately. Simply return them to us with your name and address.

The Fourth Dimension

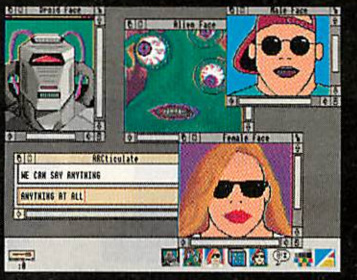
***SPECIAL OFFER:** If you buy 3 or more products directly from us you may deduct £10 from the total cost*



Drop Ship



E-Type Compendium



ARCticulate



Cataclysm



Boogie Buggy



Grievous Bodily 'ARM



Holed Out Compendium

For Full Details of All Our Software...



and ask for our brand NEW...

Includes:

- **Over 100 full colour Archimedes screenshots**
- **Detailed product descriptions**
- **Independent magazine reviews**

Available as from 11th November '91

FREE

BBC A3000 & ARCHIMEDES

LARGE 16 PAGE FULL COLOUR CATALOGUE

PLUS FULL details of our exciting range of innovative EDUCATIONAL software

Your copy will be sent to you immediately free of charge by 1st Class post. If you ring outside office hours simply leave your name and address on one of our answering machines.

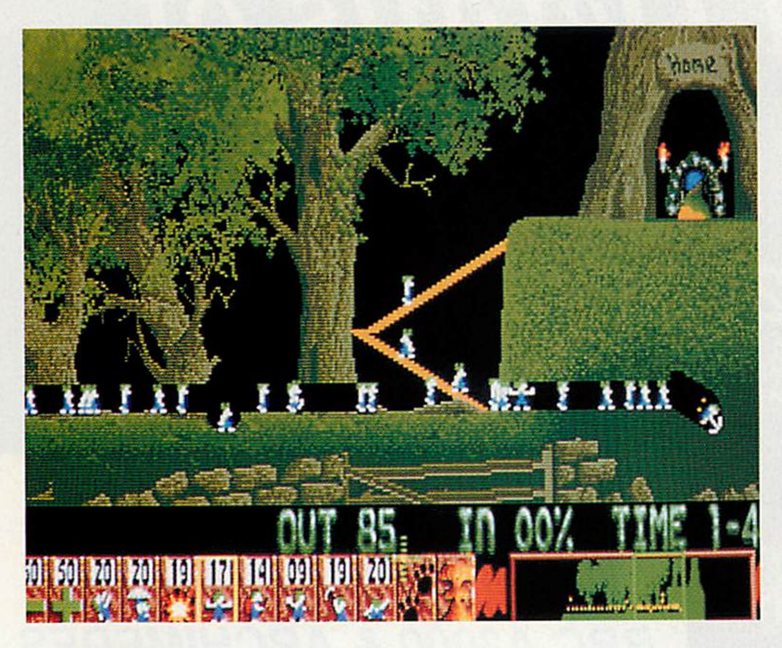






TOP SCORE

The BBC Acorn User reviewers put their heads together for this one. By popular poll, here are the 20 most highly rated Acorn games in the cosmos – by us at least!



1 Lemmings

Krisalis £25.99

An incredibly simple idea; a really stupid concept: mix well and you've produced the basis of many a good game. Add a few little men in blue dungarees with green hair, a few cliff tops and a large body of water and splash! There goes your first lemming. Well, you should know the game by now. There is enough information in this issue to write a thesis! But there's a plausible reason for that, one which also explains this game's instantaneous ascent to the numero uno position. It's an incredibly good game. Just why is another matter. Is it the gameplay, the sound samples or the graphics? Or does *Lemmings* tap into something deep, dark and sinister in the human psyche? After all, most of the fun comes from watching the cute critters being crisped, crunched and chopped up.

Whatever the reason, there was just no other choice for the top slot. *Lemmings* clocked up almost twice as many points as its nearest contender in the *BAU* poll, and for the normally argumentative *BAU* team to agree on something as easily as that there really can be little doubt – this game will waste your precious time like no other.

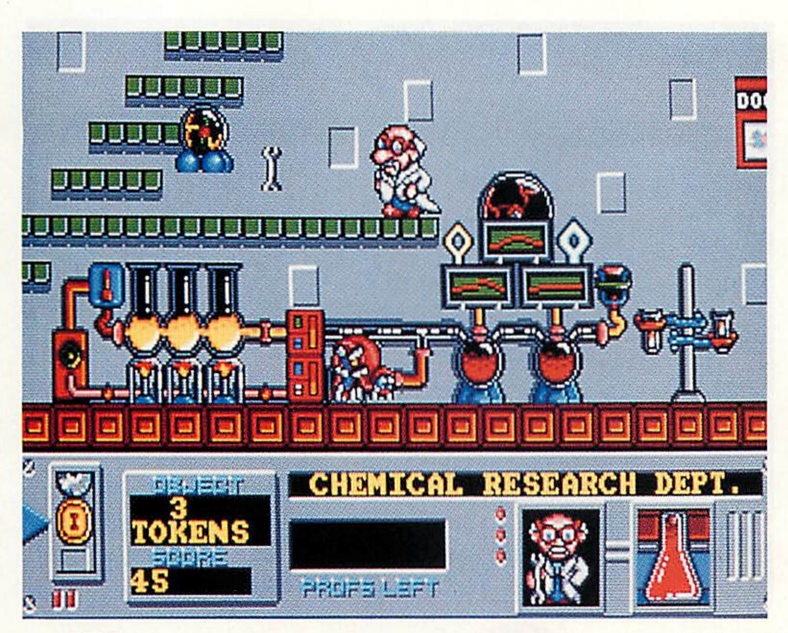
2 Chocks Away

The Fourth Dimension £24.95

Tally Ho Ginger! Some bally bandit just knocked us orf the top spot! Well that it certainly did, but not without a fight, or should we say flight. *Chocks Away* is a flying game, in which you pilot a vintage red Tiger Moth around a map blasting merry hell out of anything that moves. And rather a lot moves, particularly in the *Chocks Away Extra Missions* game, which costs £19.95.

In the game you take off from an airfield and fly to the target. The objective is real simple: shoot the target, avoid the flak and destroy the enemy fighter planes that are sent to intercept you. In the original *Chocks Away* there are three maps, one comprising land, one that is mainly sea and the other about half of each – in the sea map your airfield becomes an aircraft carrier, complete with arrester wire. The *Extra Missions* version has bridges, trains, barrage balloons and even a 'phantom' plane that shadows you. Possibly the best feature is the ability for two players to work together on a single mission in different planes either by linking up two machines or by splitting the screen on a single machine.





3 Mad Professor Mariarti

Krisalis £20.53

Mad he certainly is, but the madder he will become unless he can close down his five laboratories, which are having an adverse effect on Mariarti's sanity. And no wonder, because within them lurk such beings as dancing flowers and man-eating floppy discs, not to mention vending machines that dispense blackcurrant jam and/or Virus Killer depending on the requirements of the day.

Mad Professor is a ladders 'n' platforms game in the purest form, with puzzles to be solved and new levels (laboratories) to be explored. The good professor is a jack of all trades, and his research spans the chemical, electrical, biological and, most terrifyingly of all, the computing branches of science. The experiments he conducted turned sour, and hybrid creatures formed from his results. Not being able to find anyone daft enough to take on a seven-foot dancing skeleton the prof enters the labs himself. Mad you may say, but then again: while the world relies on him, he relies on you.

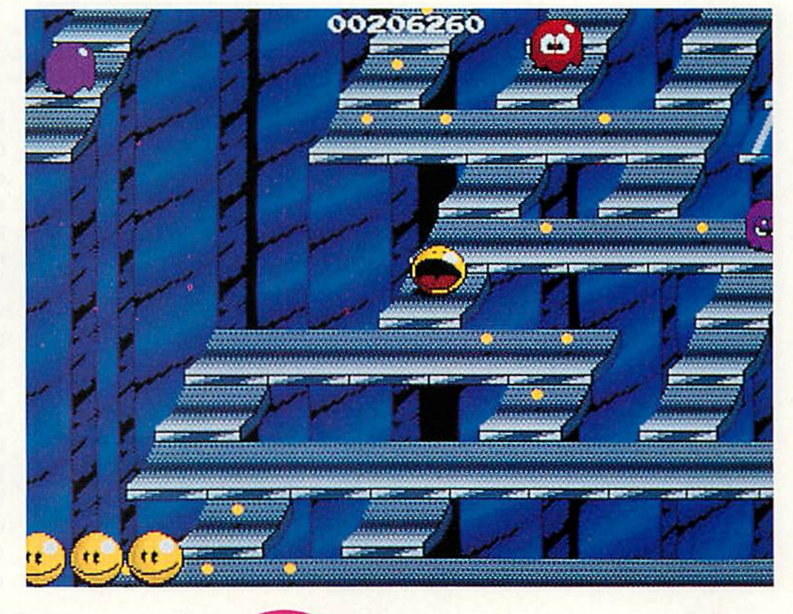
Probably the best arcade adventure for the Acorn 32-bit range, although, admittedly, these are a bit thin on the ground.

4 Pacmania

Domark £TBA

Pacmania is another classic arcade game, in which you control a smiley little spherical guy with a big mouth around a maze munching 'dots' and fleeing ghosts. When the original *Pac Man*, named *Snapper* on the BBC several years ago, appeared it was the most popular game available. The original was pretty straightforward. You simply moved around the maze and if you ate a power pill the ghosts turned blue and you could munch them too. With *Pacmania* the view has changed to three dimensions, instead of two, and Pac Man can also leap over the ghosts, adding a tricky new aspect to the original. The graphics in *Pacmania* are a positive point and there are four different worlds to play in, ranging from a sort of Lego-block land to a few small pyramids to a weird space-age catwalk structure.

It is the sort of game that appeals to any member of the family, so it's hard to go wrong with *Pacmania*, especially if you're buying it as a present. Although it is currently not available, *Pacmania*'s new publisher has promised to re-release the game by Christmas.





5 Saloon Cars

The Fourth Dimension £24.95

There are two aspects to *Saloon Cars* which, under one roof, could be described as the simulated adventures of a saloon car racing driver. You play the role of someone who likes to race her or his Vauxhall Astra at weekends and try to win races to support this financially burdening hobby. The game comprises both an arcade driving simulator and the more 'managerial' aspect of buying, selling and generally tweaking your car until its performance is at a peak.

This involves buying the most expensive tyres you can afford, preferably an anti-spin clutch mechanism and tweaking the gear ratios to boost the speed, plus a few other extensions. But money is the bottom line and fancy cars don't drive themselves, so the winning of races is vital. If you win enough races and cash you are offered the opportunity to ascend a class and drive a BMW M3. Drive well in this and you could end up burning Silverstone or Brands Hatch in a Sierra Cosworth.

Saloon Cars is probably the best driving game on any computer but be warned that it is quite difficult to master, even on days which started well.

6 Twin World

Cygnus Software £19.95

Twin World is set in a weird land far, far away, which is inhabited by many stange creatures that are best decribed as demons or wizards. The game touches on the ladders 'n' platforms formula but there are really only two platforms (hence *Twin World*), one above the other, and the game scrolls horizontally as you walk.

The objective in *Twin World* is to find all 23 parts of the magic amulet that was once owned by your now-defunct old dad. It was stolen by an evil druid and is now protected by a bunch of weirdos in a twin world! To assist you in this dubious task you are armed with a bubble gun that pelts baddies with different coloured bubbles, each one of which has its own baddie-destructive properties.

Twin World makes no great demands on the intellect, but you do need your wits about you in order to complete it, since a bubble gun can solve only so many of the problems, and you will find yourself having to study the map and its associated objects very carefully.



7 Tower of Babel

Cygnus Software £24.95

This is the most recent game to be converted from the 16-bit world by Cygnus – you'll find it reviewed in Game Show for this issue. *Babel* takes you through an intense course in 3D puzzle-solving. Take charge of your three giant spider vehicles, Zapper, Pusher and Grabber, take a deep breath and you're faced with a strange landscape of sliding objects and multi-level towers.

Achieving the objective of each tower puzzle takes guile as well as determination, but the real charm of the game lies in the almost tactile sensation that the objects in the game universe give you. When you slide a huge block across the game board, you really feel it laboriously move.

This is also a game for techies. The Babel robots can be individually programmed, using a simple language. You'll need to do this often to get them to work in harmony. And finally, besides all these wonders, the game comes equipped with its own user-friendly tower designing utility, so that you too can outdo the authors and baffle your friends. *Tower of Babel* is a classic in the making.

8 Pipemania

Empire £24.99

It's all about flooze. Yukky, sticky, slimy flooze, and it's on the loose. Luckily the expert plumber (you!) is on hand day and night, as all plumbers heroically are, to sort the stuff out. It leaks, you pipe it, simple as that. Your score at the end of the day is based on how good a plumber you are. Naturally, the definition of 'good' stems from the ancient plumbing tradition, still avidly adopted today, of seeing how much pipe you can squeeze into a room and still claim that the system works without dripping. Hence, the more pipes the flooze gets to flooze through the more points you get.

Of course the proof of the plumbing is in the leaking, and you don't have much time to construct a water-tight path of pipes before the flooze begins to flow. As far as it is concerned a good day means just flowing on by, no gaps, straight down the pipe. But you're at the other end, desperately trying to find a piece of pipe that both fits and goes in the right direction. Such a task may sound simple, and to a large extent it is, but if the flooze begins to close, the sweat begins to roll and very soon you'll be realising what a both tricky and addictive game this is.





9 MiG-29 Fulcrum

Domark £40.85

MiG-29 has been dubbed *Interdictor 3* by more than one person and it's a charge that is not easy to deny. *Interdictor* was the first flight simulator to be written for the Acorn 32-bit range and it was subsequently followed up by, unimaginatively, *Interdictor 2*. The basic idea in all three games is to pilot a modern jet fighter around a map and strategically reduce 'the enemy's' defences down to zilch before taking the final runway and claiming triumph.

To the untrained eyes the difference between the three games is not great, but if you really get into them, the missions in each begin to emerge as separate challenges, and of the three *MiG-29* is the best. A sequel to *MiG-29* has recently been released athough it is not as good as its predecessor.

A *MiG-29* is of course a Soviet jet, and that slaps a new angle on the fictitious elements in the game, namely the story behind each mission – there is even one set in the Persian Gulf. The aircraft is simulated as convincingly as one can be convinced by a vehicle they've never flown, and most contemporary missile sytems are simulated in the game. Smooth and very good fun.



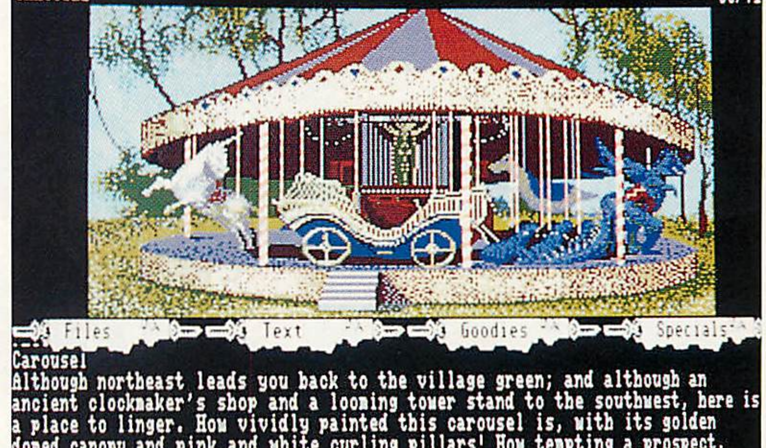
Jinxter

Not currently available

This is the first proper adventure game so far in this Top 20, being a text based game complimented by a few pretty pictures and a cracking plot. *Jinxter* was released in 1989 about six months after the previous Magnetic Scrolls adventure , also recommended. The *Jinxter* objective is one not unheard of before, being along the lines of 'save the world', this time from evil Green Witches who have stolen a magic bracelet and plan to use it to create chaos; such is the mentality of a witch.

Such is your mentality, you have accepted the dubious honour of this task and armed only with your brain, wit, charm and, later on, flippers, mask and wet suit, you go to it! The parser is used to interface your brainwaves on what to do, where to do it and why, with the computer and it's a very good one. This makes it possible to type in sentences containing several game instructions, all in proper English if you like, and then have them all executed correctly.

Further information about adventure games for the Acorn 32-bit range can be found on the Adventures page.







Bug Hunter in Space Minerva 17.95

Mr Hunter doesn't like bugs – he's a guy who just doesn't get on with the things. So you can imagine his profound disappointment one morning when he learned that his home planet was about to be attacked by little space bugs, a feeling which rapidly turned first to anger, then to business.

For Bug Hunter is his name and bug hunting is his game. And yours too, should you decide to accept this mission. OK, enough of the spiel, what's the idea? Well, instead of nuking the bugs, the Earth Federation decided to send in someone small enough to destroy the bugs' spaceship from the inside. This involves solving a few puzzles, popping the odd bug and eventually setting off a chain reaction to terminate the ship itself.

Bug Hunter is not the sort of game that makes you go 'wow' at first sight but it is cute, it has reasonable graphics and it possesses an addictive quality. If you have been with the Acorn market for a few years you will remember *Repton*. When *Bug Hunter* came out it was the nearest thing to *Repton* and that assessment still holds water.

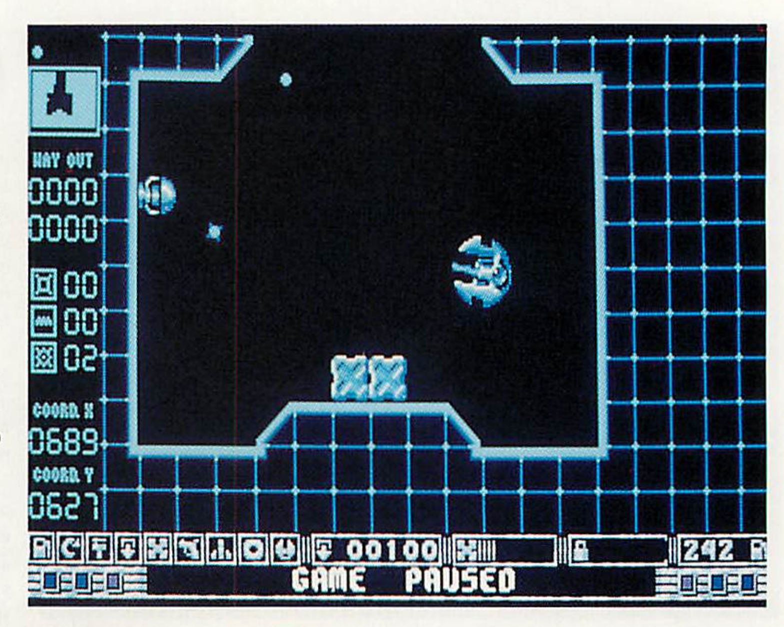
12 Rotor

Arcana £24.99

Rotor is a space game in a very traditional sense; fly around, shoot a whole bunch of nasties and upgrade your ship. The *Rotor* spaceship is essentially round, it rotates, and there's a booster thingy on the back to propel you along. The game itself is set in an underground space station so a lot of delicate manoeuvring around rooms is required, and a spot of sharp shooting is not out of order from time to time.

Upgrades to your ship can include more powerful after-burners and side rocket boosters to help you rotate with greater haste! In some rooms the gravity can be quite strong so the latter here becomes a distinct advantage. There are no particular 'save the world' characteristics in *Rotor*, more a sort of 'save yourself' objective in fact, which is not an unreasonable target to head for if you think about it.

Rotor is basically a very simple arcade style shoot-em-up which BBC veterans have likened to the space game *Thrust*. Graphically it is by no means stunning, and the sound is fairly bad, but for simple addictive gameplay it definitely deserves a place in the Top 20.





13 Top Banana

Hex £25.99

Oh no like man like I just fell into this like really amazing situation man like I was standing on the ground and there were these really wild ledges stretching up above me with totally far out fruits and sweeties and acid drops lying around on them and mad waiters and chainsaws and horrible bits of litter like soft drink cans man were rolling around up there but like I didn't even get time to stand and admire this totally freaky scene man 'cos like there was all this water below my feet and it was like rising up about me and I looked up above me and I saw the Tap from Whence the Water Floweth and then I knew that I had to groove on out of there up these crazy weird platforms pausing only to quench the ravening munchies with some bites of sweeties and stuff and I found if I really like set myself to it I could like engulf the freaks that were wandering around in a like vibe of love and beauty and then they just like faded away leaving the true beautiful core of their being behind man and it was like really freaky like that was back in '91 and I haven't really got it back together since then so can you spare me some change please?

14 Wonderland

Virgin £35.75

Take on the persona of Alice and enter the world of *Wonderland*, the most recent adventure from the house of Magnetic Scrolls to enter this Top 20. This time, however, the game has caught up with the technology and runs entirely within its own windows system called Magnetic Windows. Not merely passive, the windows setup is used for moving around and performing functions such as PICK UP and EXAMINE. Incidentally, some earlier Magnetic Scrolls adventures have since been revised and updated to implement the Magnetic Windows feature.

In *Wonderland* almost every location has its own picture, sometimes with animation, and as a result the game is supplied on four discs. Everyone's favourite characters are involved in the plot and it certainly helps to have read the Reverend Charles Dodgson's classic before you begin! The puzzles featured in *Wonderland* are of a particularly high standard and it is definitely one of the more difficult Magnetic Scrolls games available. The only thing lacking is sound, which has not apparently been implemented in the Acorn version.



File Text Verbs Commands

As you approach the Duchess' house, a footman in livery comes running out of the wood (you consider the footman to be a footman because he is in livery, otherwise, from his face alone, you would have called him a fish) and raps loudly at the door with his knuckles. It is opened by another footman in livery, with a round face, and large eyes like a frog. The fish footman then produces a large envelope from under his fin

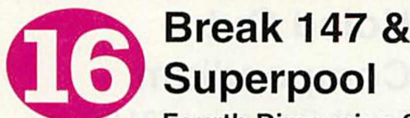


15 Apocalypse

The Fourth Dimension £29.95

When somebody asked the author of this game to write a 'shoot-em-up' he followed their instructions to the letter. And we're not joking! You sit in a flying saucer armed with a yellow photon gun and traverse the planet's surface blasting the pants off anything that moves and, indeed, blasting the pants off anything that doesn't move. If you meet something that falls into neither category you might hesitate for a brief contemplation, but you'd still end up blasting the pants off it!

There are several planet surfaces whose pants need a bit of blasting and those pants are often small towns or villages, inhabited entirely by baddies no doubt. There are also rivers and boats, 'processing' pants (sorry – 'plants') and other sites on which to wreak havoc and yellow photons. Whenever you manage to annihilate something it either burns for a little while or combusts spectacularly producing a cloud of black smoke. There is probably some sort of humanitarian mission that you are supposed to be completing, but we don't know what it is and since it undoubtedly involves blasting the pants off everything, there seems little point in finding out!



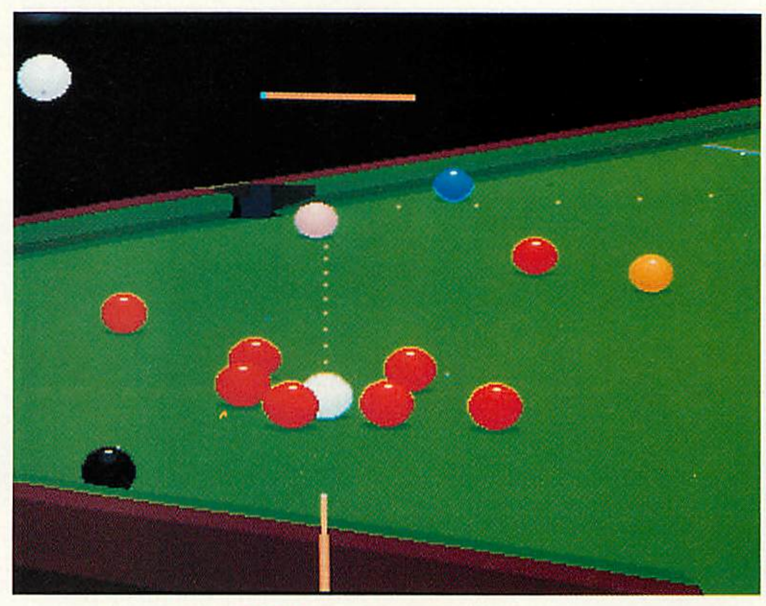
16 Break 147 & Superpool

Fourth Dimension £24.95

Now this is a good game. It would probably have emerged slightly more victorious if everyone had a chance to play it before we went to press. The graphics are so good that certain photographs of the game being played could almost be mistaken for the real thing and the behaviour of balls and cue are immaculately simulated.

We set up a game with two people – one of whom is familiar with the computer and mouse but pretty useless at pool, while the other one knows his balls but has limited experience in using a mouse. The resultant contest was one that could have easily been played in the pub – the mouse expert was thoroughly and convincingly trashed.

In other words the computer appeared to neither restrict nor enhance the success of either player, but rewarded the player with true real-world skill, so this is surely a good indication that this game is about as close to the real thing as you can get without having to buy the next round.





17 Zarch

Superior Software £19.95

One of the very first games to be written for the Acorn 32-bit computer is still regarded as a fine game on the computer today, four years after the machine's launch in 1987. That says one of two things. Either this game is very good, or the games market has been pretty damned bad. A little of both probably, though the performance of *Zarch* should not be underestimated. Now everybody knows that *Zarch* is a space game, because everybody has played *Lander* which is supplied with the Acorn equipment. The dilemma facing many punters is that 20 quid is a lot of money to fork out for a game that, despite one or two cosmetic differences, is identical to the one that they already own.

Go ahead, spend the money. *Lander* is fun; *Zarch* is a game. *Zarch* has a map, it has a string of bad guys and most importantly of all it has a series of challenges that develop as you play the game. And that's what gives it the quality possessed by the greatest games – something to get hooked on. Use *Lander* to practise on, but don't let anyone – yourself included – tell you that it is a game. It isn't. *Zarch* is.

18 Zelanites

Micropower £24.95

Zelanites is essentially *Space Invaders.* Micropower doesn't like us to make that comparison, we know, but it's like trying to persuade somebody that zebras wear pink pyjamas or trying to close the door on a sales rep! Sorry, Micropower, but *Zelanites* is *Space Invaders* and zebras don't wear pink pyjamas. But hang on, *Space Invaders* is even older than *Zarch. Space Invaders* is as old as the hills, we are talking seriously dated here. So either somebody who voted for this game is senile themselves, or this is a good game.

The plot is very clear. Aliens descend from top of screen to bottom of screen and you blow them away, before they arrive at the base of the screen where your little spaceship resides. Wave after wave of alien tries it on, and each and every one must go. Occasionally one of them drops a parachute containing a bonus extension for your craft, something that will make your task against the Martians that much easier, you know the sorts of things: a multiple missile firing system, shield or a 'freeze-ray'. *Zelanites* is a real old blast from the past but with fine graphics and good gameplay.







19 Holed Out Compendium

Fourth Dimension £24.95

It would be wholly incorrect to say that the sedate game of golf has not been represented by a computer game on the Acorn 32-bit range. In fact it would be a gross lie because no less than four golf clones have made their way onto the format over the past few years. Of these, *Holed Out* has just been nominated as the original and best. Why is this? There could be several reasons. The graphics in *Holed Out* are interesting because, although not half as detailed as some of the game's contenders, most people actually prefer them. It's all down to aesthetics. The sound is also nicely done, and several new courses were released for the game shortly after its release.

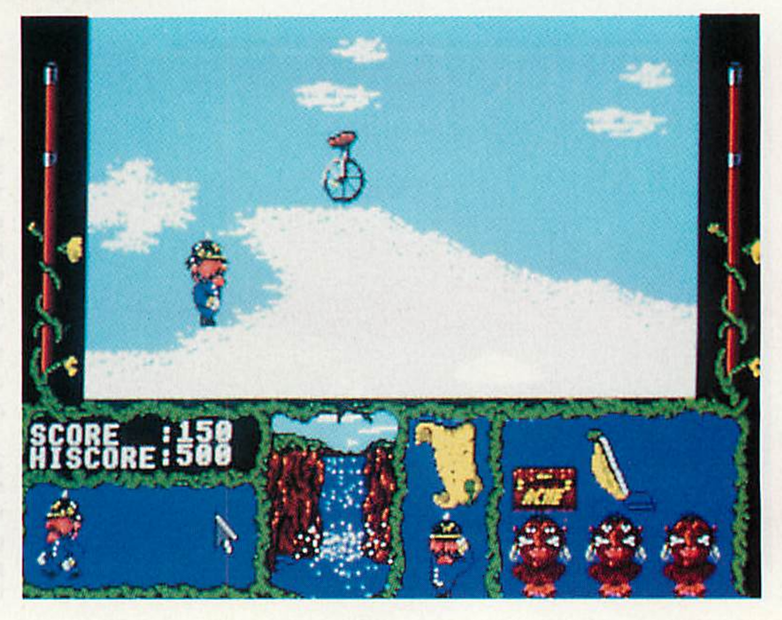
It is probably the gameplay that makes *Holed Out* the most popular, since, through skill, sheer determination, or more likely pure luck, the difficulty level has somehow been set up to cater for all comers. There are two other very good golf games: *Superior Golf* from Superior Software and *Microdrive* from C.I.S., the latter of which is more of a 'simulation'.

20 Terramex

Krisalis £TBA

This was one of the first ever games to appear on the Acorn Archimedes, and it was written by the same team that has just brought us *Lemmings*, Krisalis Software. *Terramex* is very clearly an arcade adventure. You control one of five explorers around an underground labyrinth that is accessed via an old well, collecting and using objects along the way. The puzzles are quite straightforward and *Terramex* makes a good game for the middle class of adventure players – not the hardened fans. The ultimate aim is to find one Professor Eyestrain and convince him to save the world, followed – as if that were not enough – by helping him to save the world. You see, a big hole in the planet will soon develop unless an oversized asteroid can be persuaded to divert from its current course.

The graphics in *Terramex* are almost unrivalled, smooth and colourful with good animations. *Terramex* was published three years ago by a company that has since gone out of business. However, Krisalis Software has promised to re-release the title for the Acorn 32-bit range for under £20 by this Christmas, so if you haven't already got a copy, look out for this one.



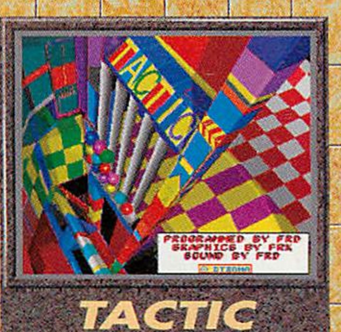




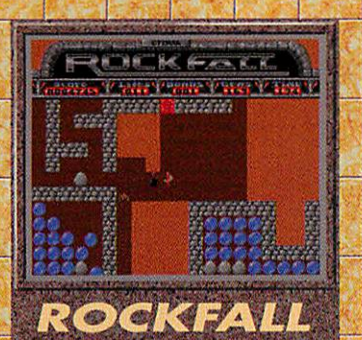
BALLARENA



KERBANG



TACTIC



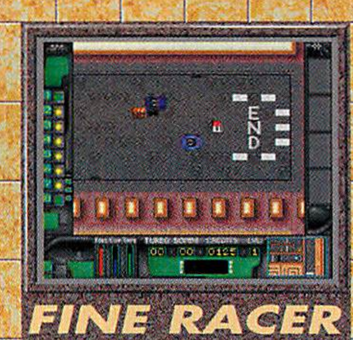
ROCKFALL

See our two top secret games on our stand at the



ΣTΣRNA STAND N°9

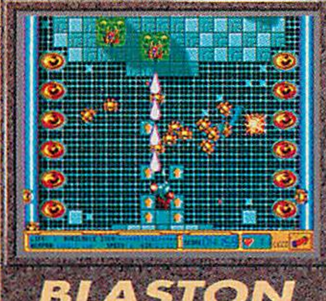
TOP SECRET



FINE RACER



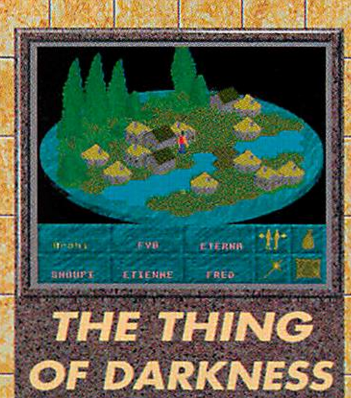




BLASTON



POIZONE



THE THING OF DARKNESS

BALLARENA : "...Game of top quality...",BBC/Acorn User; "...polished and professionnal as well as beautifully...",The micro user;"...technischer Perfektion bei der programmierung!..." ASM march 91

TACTIC : "...addictive game,containing precisely the right amount of simplicity and ingenuity to keep a player going back again & again "The Micro User;"...horribly addictive..." BAU,"...Technisch ist es ebenfalls nahezu perfekt...",ASM mai 91

BLASTON : 4 levels of fight with 256 colors,scroll,animation. "Blaston is well programmed,with good graphics and sound making a profiessional-looking package",The micro user July 1991

FINE RACER : Take control over a fast rally buggy and race against opponents, in a land of adventures. "...a great game,terribly addictive,good looking and good fun",BAU august 91

BUBBLE FAIR : It all began at the fair.Inky and Jinky were just having fun when the first bubble came down from the sky... 72 levels,challenges,bonus..It uses a big overscan screen(384*264) in 256 colors.

KERBANG : A really addictive game for your ARCHIMEDES,have you the right reflex? DESKTOP compatible.

ROCKFALL : You will love this game.Marvellous animations from authors of the LUCKY LUKE and CUBITUS demo.Indispensable.

POIZONE : Help your penguin to destroy all the toxic blocks in a given time and try to assemble the diamonds.Two players in a very large scrolling land.Fantastics graphics and sound.50 levels

THE THING OF DARKNESS : More than 3000 screens in this fantastic and first ever role playing game for the ARCHIMEDES.First create your heroes and then immerse yourself in this incredible adventure.



PRICES & AVAILABILITY

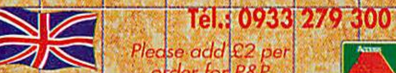
GAMES	EU / UK	France	Germany	AVAILABLE
POIZONE	£19.95	225 FF	DM 69	09/91
BUBBLE FAIR	£19.95	225 FF	DM 69	OUT NOW
ROCKFALL	£19.95	225 FF	DM 69	10/91
KERBANG	£14.95	175 FF	DM 45	09/91
TACTIC	£19.95	225 FF	DM 69	OUT NOW
FINE RACER	£19.95	225 FF	DM 69	OUT NOW
BALLARENA	£19.95	225 FF	DM 69	OUT NOW
BLASTON	£19.95	225 FF	DM 69	OUT NOW
THE THING OF DARKNESS	£29.95	325 FF	DM 99	10/91

GAME'S CREATOR

Do you know why coders, graphic artists and musicians from France, Ireland, Germany and Switzerland work with us?
It's because we offer the highest royalties and we also do adaptations for coin ops and other computers.
You want more informations : Send us a sample of your work (game's demo,screens,track...) and we'll send you our views :
ETERNA, 4 rue de massacan, 34740 Vendargues, FRANCE



ΣTΣRNA c/o Vector Services
13 Denington Road - Wellingborouth
Northants NN8 2RL
Tél.: 0933 279 300



Please add £2 per order for P&P





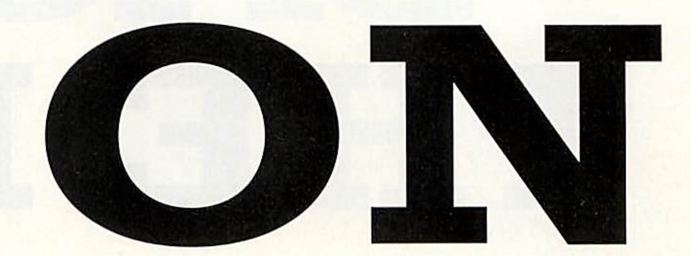
ΣTΣRNA
4 rue de Massacan
34 140 VENDARGUES - FRANCE
Tél.: 67.87.32.12
Tous les prix sont TTC et port compris



UFFENKAMP Computer Systeme
Gartenstr.3 W.4904 Enger
Tel: 05224 2375
Lieferung gegen V.Scheck (+4,50 porto) oder Nachname.
Unsere spiele sind auch bei allen gut sortieren Archimedes Händlern erhältish Händlernachweis gegen rüchporto.



VENTURING ON



Adventure games are a highly literate form of computer entertainment. **DAVE LAWRENCE** looks at the delights available on the Archimedes

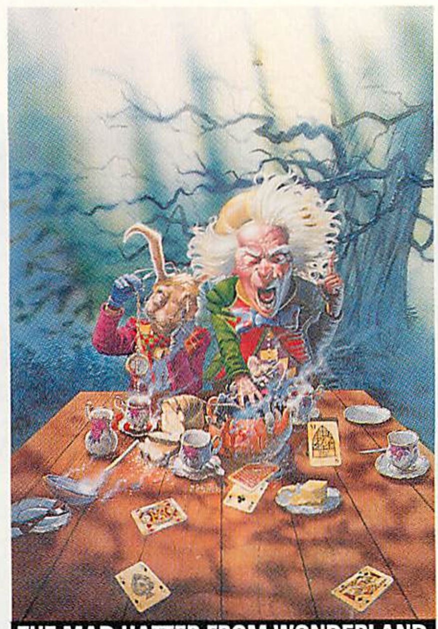
The world of Archimedes and A3000 adventures is a little on the small side, to say the least. Out of roughly 130 games, there are only a few adventures. Luckily, the majority of these are excellent and would keep any adventurer happy for many a long evening.

The biggest name in Archimedes adventures must surely be Magnetic Scrolls, which has released *The Pawn, The Guild of Thieves, Jinxter, Corruption, Fish* and, most recently, *Wonderland*. The company started five or six years ago with *The Pawn*. This was available for the ST, Amiga and PC only. The others were released at yearly intervals, again only for these machines. *Corruption* was the first to be converted for us Acorn users.

Since then all titles have had Archimedes versions and slowly but surely the small back catalogue of adventures has become available.

A Magnetic Scrolls adventure can be spotted at a hundred paces. Just look for the excellent packaging (normally complete with 'freebies' – there's a die with *Guild*, a beer mat with *Pawn* and a rather grubby letter with *Jinxter*). In *Corruption* the manual comes in the form of six-holed personal organiser pages. The games themselves are beautifully illustrated, normally in the form of a full screen, pull-down window. The illustrations are really just icing on the cake as the textual descriptions are often as colourful and breathtaking as the pictures. To complete the scene, the commands can be anything from a simple GO NORTH to OPEN THE SACK, TAKE OUT AQUALUNG, GOGGLES AND FLIPPERS AND PUT THEM ON.

LOCAL LIFE IN CORRUPTION



THE MAD HATTER FROM WONDERLAND

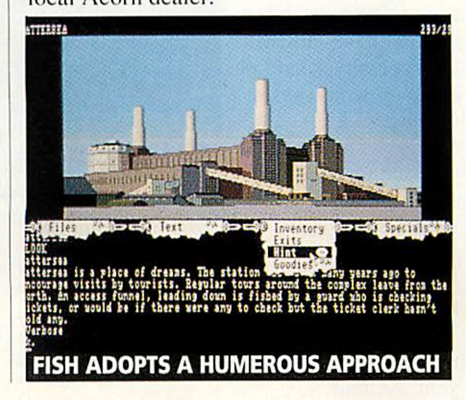
Wonderland is slightly different. Magnetic Windows, a type of desktop user interface, was developed for the game. Illustrations appear in one window, descriptions in another. The game produces a map for you as you move and you can go somewhere merely by clicking on a location. There is also an inventory window and a 'what's here' window. Picking up and dropping objects can be achieved simply by dragging them from one window to the other.

Of course, an adventure is only really as good as the imagination that went into it. Yet again, MS are practically faultless here. *Pawn* is a fairly standard adventure with open plains, bridges, demons, keys, snowmen and dragons. *Guild of Thieves* is set in the same world as *Pawn* and concerns your quest to join the guild *Jinxter* is my favourite. It has its tongue firmly in its cheek, from the moment your chair turns into Alan Whicker you know something a little weird is going on. The game is littered with countless in-jokes and references to *Pawn* and *Guild*. You must do battle with Len Wossname, ticket inspectors, the baker, the landlord and the most hideous post-mistresses!

Corruption places you in the world of high finance and unscrupulous rogues. Armed with your personal organiser, you must attempt to survive. Even at the start of the game, if you don't follow exactly the right course of action, the Serious Fraud Squad come a'knocking... I found the game a little hard to get into, especially after the frivolity of *Jinxter*, but it may appeal to the more hardened adventurer.

Fish, on the other hand, is back in the *Jinxter* camp. Humour, wit and comedy are rife in this refreshingly 'easy' game – a good one to start with. *Wonderland* is also relatively easy. It is based on Alice in Wonderland and, although it bears no relation to the story, all the original characters are present; the rabbit, the caterpillar, the mad hatter, the cook, the queens and more. Many of the illustrations are animated which adds a huge amount of atmosphere to the game.

The previous MS adventures have been re-coded to run under *Magnetic Windows*, and compilation sets of *Windows* adventures should soon be available from your local Acorn dealer.



FISH ADOPTS A HUMEROUS APPROACH



BACK 2 THE BEEB

It's undeniable that 16-bit and 32-bit games can be stunning. But, says **MATHEW TIZARD,** eight-bit games are often unfairly neglected

As the home computer technology marches on, it is all too easy to be dazzled by new developments and forget about the large number of excellent games available for the eight-bit Acorn range. The fact is that much of the leisure software produced for the mass market is successful solely on the basis of film tie-ins, or on the strength of digitised graphics. This is all well and good, but what these games tend to lack is the sheer inventiveness that BBC games software has always been known for.

Within the limitations of the machine, writers have always, by necessity, had to come up with ways of making a game enjoyable and addictive, without the benefits of megabytes of memory and multi-coloured, hi-resolution graphics. Whether you've owned a Beeb, Master or Compact for some years, or have acquired one more recently, you should know that there is still a wealth of tremendous games software available for your machine.

THE LIZARD IN REPTON HAS BECOME A CULT FIGURE

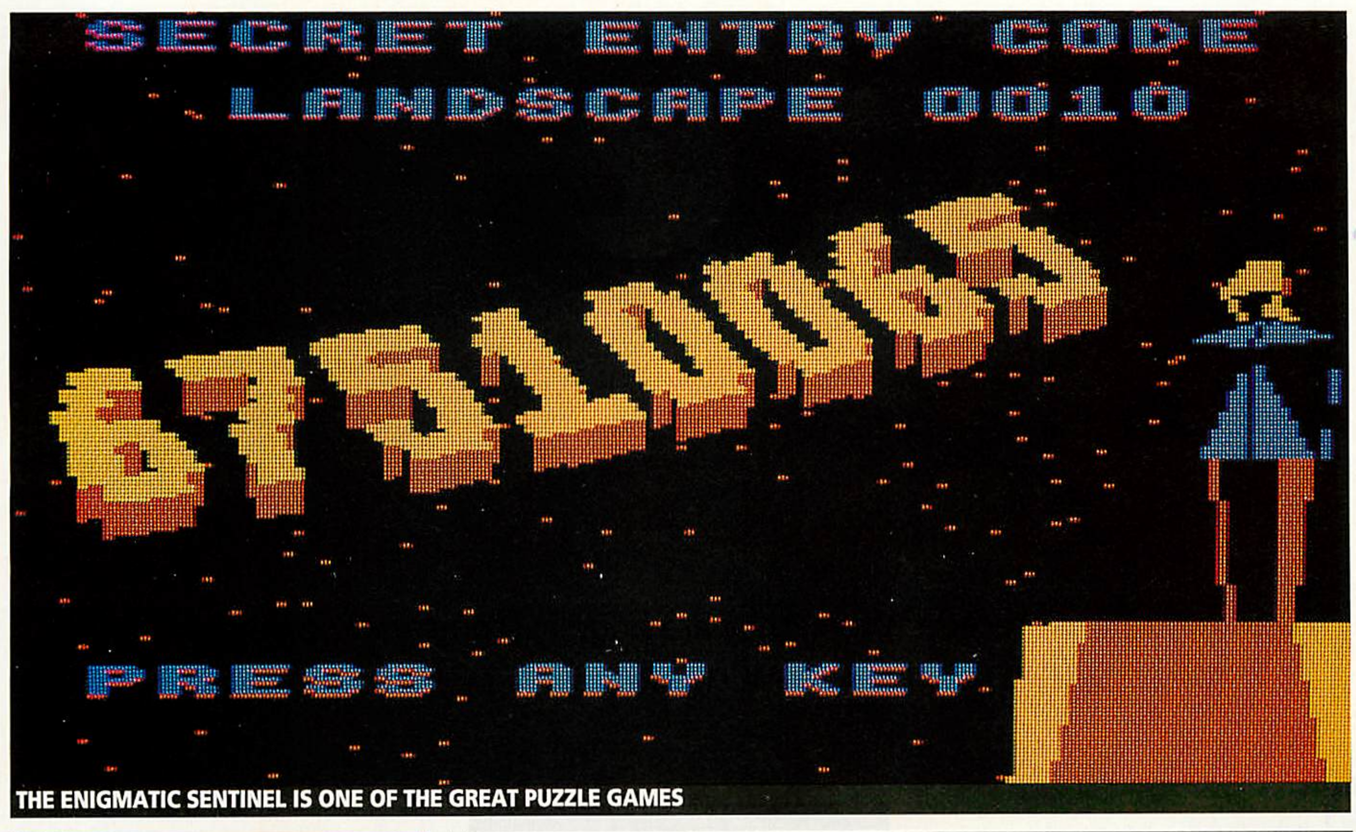
To those readers unfamiliar with game jargon, there are several different recognised classes into which most releases fall. Then there is the occasional innovative program which breaks the mould and causes a lot of excitement. Here I shall be looking at some of the best BBC games still available in each category, and give you some pointers as to which games are good value for money.

Many games have ceased to exist, simply because they originally sold out and never been remarketed. Mercifully, a new trend – that of puting several games into a single release – has saved many games from being lost to the public forever.

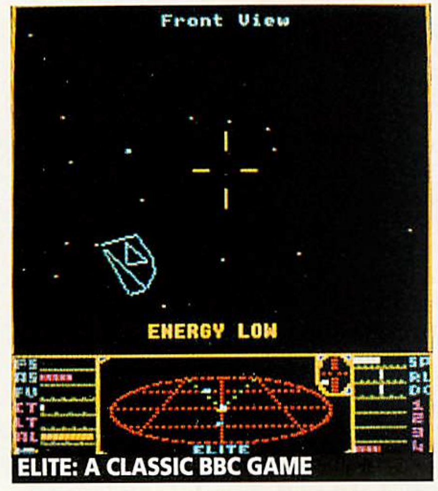
The main exponent of this noble practice is Superior Software with its *Play It Again Sam* series, currently in its 15th incarnation (see our table for details). It is probably the most abundant source of vintage games around.

There are other companies still producing good games for the Beeb, notably The Fourth Dimension with titles such as *Nevryon*, *E-Type* and *Holed Out*, all three of which are excellent. If there is a particular game you are looking for and it is not on any compilations, probably the best strategy is to contact one of the second hand software dealers, such as Computeck.

Some games deserve a special mention. The *Repton* series with the endearing lizard



THE ENIGMATIC SENTINEL IS ONE OF THE GREAT PUZZLE GAMES



ELITE: A CLASSIC BBC GAME

digging around avoiding rocks and collecting diamonds is very popular, and Repton has become something of a cult character. Mega-games such as *Elite* and *Exile* are in a class of their own. In fact, *Elite* is one of the most successful computer games ever written and was originally programmed for the Beeb. *Exile*, on the other hand, is probably the most challenging, involving and technically impressive game ever written for the machine.

Maybe at some point in the future, a comprehensive BBC emulator will be written for the Archimedes. This would allow the entire range of eight-bit games to be seen and enjoyed by a new generation of gamers. Until then, keep on enjoying them on the eight-bit machines for which they were written.

PLAY IT AGAIN AND AGAIN AND AGAIN, SAM

1 **CITADEL*(a/i) – **THRUST*(b/g) – *STRYKER*'S RUN(a/b) – **RAVENSKULL*(a/g)
2 **REPTON 3*(a) – *CRAZEE RIDER*(d) – *GALAFORCE*(e) – **CODENAME DROID*(a/g)
3 **PALACE OF MAGIC*(a) – *KILLER GORILLA*(b) – *KILLER GORILLA 2*(b) – *COMMANDO*(b)
4 **FRAK!*(f/i) – *COSMIC CAMOUFLAGE*(b/e) – *GRAND PRIX CONSTRUCTION SET*(d/i) – *SPELLBINDER*(a/g/i)
5 **IMOGEN*(f/g/i) – *ELIXIR*(a) – *BUG BLASTER*(b) – *FORTRESS*(b/e)
6 **GALAFORCE 2*(e) – *HUNCHBACK*(b/f) – *HOPPER*(b/g) – **THE SENTINEL*(i/g/e)
7 **FIRETRACK*(b/e) – *BONE CRUNCHER*(a/g) – *SNAPPER*(b) – *GHOULS*(b/f/g)
8 *WINTER OLYMPIAD '88*(b/c) – *QUEST*(a/i) – *AROUND THE WORLD IN 40 SCREENS*(a) – *MR WIZ*(b)
9 *CAMELOT*(a) – *STEVE DAVIS SNOOKER*(b/c) – **SPYCAT*(a/e/g) – *THE LIFE OF REPTON*(a)
10 **QWAK*(i/f) – *ZALAGA*(b/e) – *3D DOTTY*(b/f) – *REPTON THRU TIME*(a)
11 *BARBARIAN*(b/c/h) – *PIPELINE*(a/g) – *BARON*(a) – *MONSTERS*(b/f)
12 *THE LAST NINJA*(a/f/g/h/i) – *SKIRMISH*(b/e/f/h) – *BY FAIR MEANS OR FOUL*(b/c/h) – *BLAGGER*(a/f) (UPDATED)
13 *BARBARIAN 2*(b/c/h) – *PERCY PENGUIN*(b/f/g) – *HYPERBALL*(b) – *PANDEMONIUM*(a/e/f)
14 *PREDATOR*(b/e) – **BALLISTIX*(i/b/c) – *SUPERIOR SOCCER*(b/c) – *STAR PORT*(a)
15 **LAST NINJA 2*(a/f/g/h/i) – **CYBORG WARRIORS*(b/e/g) – **RICOCHET*(a/g) – *NETWORK*(a/e/f)

KEY

a **Arcade adventure** Move about a large setting, collecting objects and using them in different ways to solve puzzles, open doors or dispose of enemies.
b **Arcade game** A fast-moving action game, usually military in nature, involving quick reactions ratherthan strategy and brain work
c **Sport** A computer version of a recognised (or imaginary) sport.
d **Racing** Cars / bikes / spacecraft. Basically just beat everyone else.
e **Shoot-em-up** Annihilate as many aliens as possible. A surprisingly varied category.
f **Ladders & platforms** Similar to (a), but the setting is usually only on one screen at a time, and there may be many progressively harder levels.
g **Strategy** Requires some sort of mental effort. You will need to plan ahead or try and outwit the computer
h **Beat-em-up** One or more players performing martial arts, boxing, swordfighting and so on
i **Mouldbreaker** The exceptions. Usually the best games are so original, they defy classification.
* indicates a recommended game.

BIG GAMES

Their reputation precedes them, they are huge in scope and incredibly detailed. **SAM GREENHILL** and **MATHEW TIZARD** take a look at some big games

Of the many games to be released this Christmas, three in particular stand out, not necessarily because of their impending success in financial terms but because of the sheer magnitude of work that has been put in by the developers, regarding attention to detail.

SECOND GENERATION ELITE

It has been seven years since *Elite*, the biggest selling game of all time, was launched on an unsuspecting and spell-bound public. First appearing for the BBC Micro, it has only recently been converted for the Archimedes and A3000, as previewed in our September news column.

For those of you not familiar with the story of *Elite* (yes, pay attention, both of you), the plot runs like this: as an inter-galactic space trader in command of a Cobra Mk III ship your task is to fly between solar systems and dock at various space stations, profitably dealing in different cargos as you go, in order to upgrade your ship. As you progress, you have to engage in combat with pirates, or other craft who may want to steal your cargo.

Similarly, if the mood takes you, you can turn pirate and prey on those weaker than you. Once you have become competent and wealthy enough, you are asked to undertake various missions by the Galactic Establishment, in exchange for money, equipment and status. Only the best pilots, navigators and entrepreneurs survive.

The two-man programming team, Warren Burch and Clive Gringras, have spent the last year finishing the new version of



EQUIPPING YOUR COBRA MK III

the game. Many features, which the original game could only include in the manual as mere whimsy, have actually been added. Those original Elite fans who searched for the 40-mile long dredger or Generation ships will not be disappointed. All the graphics are solid of course, and the frame rate seldom drops below 23 per second, even with more than 100 ships on the screen, making previous 3D games look rather ineffectual and harmless.

Perhaps the most striking new feature is that the Arc version of *Elite* is installed on the icon bar, alongside whatever else is running. To play, you click on the icon. If you press F12 you return to the desktop, with the game paused and ready to continue. This means, of course, that you can run more than one copy of the game simultaneously. On a four megabyte machine you can play five games at once!

The other craft with which you interact are endowed with politics and motives of their own, and will intelligently seek out their own enemies and open fire, as well as docking of their own accord. These new characteristics can lead to unexpected side-effects, for example squabbles and skirmishes breaking out in asteroid belts over who gets to mine which rocks and collect the valuable mineral fragments. If you are involved in combat, the police will help you if your legal status is clean, but will attack if you step out of line.

Galaxies are now made up of stars of different ages and colours, and planets may have a moon as well as a Coriolis Station in orbit around them.

Another major feature is that ships may fly in formations of up to 50, or 'flock' by keeping within a short distance of each other, giving the appearance of migrating birds. It is actually possible to match your speed alongside six policecraft in formation, shoot one of them with a side-laser, watch them break up, re-form behind you and blast the living daylights out of you!

Both launching and docking now have their own 3D animation sequences and the trading inside a space station is financially more realistic.

Moreover it is now mouse driven, making it and other activities more dynamic and accessible. Put simply, there is tremendous attention to detail, right down to things such as the doppler effect when another ship flies close by you.

The missions you are offered are now more involved. Often touching on moral dilemmas, and questions of mercy and humanity they no longer consist of you simply travelling to a particular planet.

Since you are supposed to play the role of the hard-bitten, cynical trader, this can often place you in some interesting psychological situations.

Clive Gringras said 'It is fitting that the greatest implementation of the world's greatest game has been produced for the greatest personal computer in the world'.

And this sums up the situation well, because although they have made many new and exciting changes, the programmers have kept more or less to the same design brief and ethos of the 1984 version. In this sense it is more a second generation *Elite* than an entirely new game.

Elite on the Arc is finished, but at the time of writing the actual publication details have yet to be finalised. Visitors to the *BAU* show will no doubt be traumatised by the fact that the new *Elite* will be there to see, but they probably won't be able to buy it!

RICK DELARRE AND IAN ROBINSON OF PERISCOPE SOFTWARE

KARMA

Another space game, due for partial release by Christmas, though not completely until next year, represents the fruits of eight man-years of intensive work by Rick Delarre and Ian Robinson of Periscope Software.

Karma, which will be published in sections and could eventually total seven or eight discs, has been generating rumours since a teaser advert appeared in *BAU* August 1989. Its authors' claim, that it takes up the idea of 3D space adventures where *Elite* left off, is, from what we've seen, not an unfair comment.

If you ever wondered where a passing space ship was actually going in the original *Elite*, the answer is nowhere. In the new *Elite*, the ships do have a purpose and if you follow them it will become apparent. However, in *Karma* this idea is taken a step further, for when a ship has docked you can follow the crew home, or to the shops or wherever they decide to go, and you will also be able to interact with them.

Until now it has been difficult to think of a space game without visualising *Elite*. *Karma* is visually similar in as much as it uses solid 3D graphics, but in *Karma* these are shaded in accordance with the position of light sources and also use more complicated shapes such as wings and antennae. In terms of speed, however, *Karma* is predicted to run at between eight and 25 frames per second, while *Elite* runs no slower than 23. The background story in *Karma* is that the universe has begun to contract and, unless humanity can be rehoused further out in the cosmos, there will be no one left to regret not having sent you out to find a new home. It is a program of unparalleled complexity, being more akin to a true Virtual Reality life-model than a game.



RUSH-HOUR IN KARMA

The galaxy that you have to explore is modelled to an accuracy of 3.9 microns, and is no less than 8000 light years across. Moreover every orbit of every body in this galaxy is accurate and the entire program runs in real time.This means that if you stop playing for a week all the planets will be that much further advanced along their orbital trajectories when you resume play.

But it goes further than that. In *Karma* the people also live in real-time. So if you only ever play the game at nine am you'll always experience the rush-hour with people going to work. If you follow a miner, he, she or it (four sexes exist in Karma) will fly from a residential area to the mine. If you spot an ambulance you could choose to follow it and, since there is a reason for everything in *Karma*, you may come across an accident in space, possibly caused by a pilot having had too much to drink the night before. And if you'd followed that pilot the night before he, she or it would most likely have gone to the space-pub. It's all simulated, and that's why *Karma* is called a life-model.

Each time you play, the game performs a 'catch-up' cycle, in which the positions and states of all the people and objects are updated since the last time you were in the solar system. A wide variety of astronomical phenomena are faithfully modelled and include black holes, neutron stars and planets, detailed down to their atmospheres' chemical composition. So wide-ranging is the game that since the project began four year ago, both Rick and Ian have become experts in all three sciences, as well as mineralogy, social geography, psychology, botany and a host of other disciplines.

The life-form model is so complex that it makes the space travelling aspect seem almost obsolete. As you fly around planets, ultimately trying to find a permanent settling ground for the several billion people back home, you must take life as it comes. Making friends is a good idea as somebody somewhere is bound to be able to help you.

Making friends takes many forms. You might, for example, decide to take sides in some sort of ethnic or religious conflict and you could be given the task of helping to destroy an enemy weapons station. If this is scheduled to take place a week from now, you'd have to be sure you turned up at the right time – a real week ahead.

If you are successful in your new 'life' you may find yourself progressing up the social ladder, and possibly able to converse with someone of real power, for example an ambassador or the Prime Minister, who might help your ultimate cause. The government of that civilisation could give you a job in a high place, or issue you with a passport making travel through their star systems a lot easier.

The life-form simulator works using a tree structure which keeps track of practically everything in the game. Rick explains how they created the system.

'We started by defining a series of rules for everything in the galaxy. We built up lots and lots of rules, defining what should happen when a pilot drinks too much alcohol, the behaviour and natural tensions

between two civilisations that have different gravity levels and so on, until the galaxy was absolutely bursting with potential. Then, when we gave it a prod, the whole thing sprang into action, with rules for one event sparking off another event somewhere else. The game lives on its own, whether you play it or not.

'What we're doing is so big, it's outrageous. We're lucky not to have been regarded as a couple of crackpots. We've spent four solid years on this project now, and for two years couldn't waste time or money going out for a drink or anything. We've suffered for this game!'

Good luck to them, and we hope they finish it soon. But therein lies the main difference between *Karma* and *Elite* at the moment: *Elite* is on the shelves as we write, *Karma* won't near them until Christmas, and then only in the form of a Training Mission. The full version, including the life-form simulator, will not be available until next year. However, when it does finally come out it will probably be awarded an accolade for being the largest and most innovative project undertaken in the Archimedes games world, and we're certainly looking forward to playing it!

RAY MAIDSTONE WITH HIS TALE OF ANUBUS IN THE BACKGROUND

TALE OF ANUBUS

If *Karma* is destined to collect next year's award for Greatest Project Ever Undertaken then *Tale of Anubus*, scheduled for a Christmas release, is this year's winner, and will probably run a close second for a long time to come. It is an Egyptian adventure being written almost entirely by Ray Maidstone who has studied Egyptology in his spare time for the past 18 years.

In *Anubus* you move around inside a large pyramid searching for clues which will eventually enable you to release the pharaoh who was wrongly imprisoned long before the Guildford Four were even thought of – in 2575 BC to be exact!

The clues were left by a guy called Wbnr (pronounced Weboner), Egyptian for priest, who was killed by evil spirits while attempting the same task several millennia earlier. The pyramid contains many things to be discovered, including the all-important mummies and magic potions, and sounds rather like any other normal arcade adventure.

Except that it isn't by a long way, and for several reasons. Firstly, the graphics are in a state of absolute perfection. It is hard to imagine a game that could look better on screen. Try to imagine cruising down a corridor in a pyramid and coming across a goddess who casually walks up to you, uttering an eerie, hollow, whispering sound, filling almost the whole screen.





ONE OF ANUBUS' LIFELIKE GRAPHICS

She's extremely lifelike for the very good reason that the screen characters are based on real models, who found their way into the computer via broadcast-quality video equipment and colour digitisers. The winged goddess was created by filming a girl made-up to look like an ancient Egyptian, wearing a costume designed and crafted by Ray and his assistants.

Ray is a musician and used to work as an audio engineer and so the sound is also professionally recorded. In fact it is only reduced in quality when it reaches one of the two Archimedes on which the game is being developed. This attention to detail is maintained throughout. Ray's studio is full of books on pharaohs, ancient Egypt, and pyramids; a video-tape entitled *Sphinx*, a Walt Disney book of cartoon animations and even a cardboard cut-out of Jessica Rabbit, wife of Roger.

'The object,' Ray concluded, 'is to make this game as realistic as possible. I want people to feel as though they are walking around a pyramid 4000 years old'. To this purpose there are no indicator bars on the screen showing things such as the state of your health. 'Instead, if you eat something poisonous then the screen palette begins to turn green and the screen wobbles around, simulating blurred vision. Similarly, if you are wounded then the palette turns red, or yellow if you become too hungry.

'You move around using the mouse. Move it forward and you take a few steps forward, move it left or right and you sidestep, and so on. You can pick something up by holding down the Select button, and you can even tap a stick from side to side if the lights go out. The Adjust button is useful for checking walls for secret panels'.

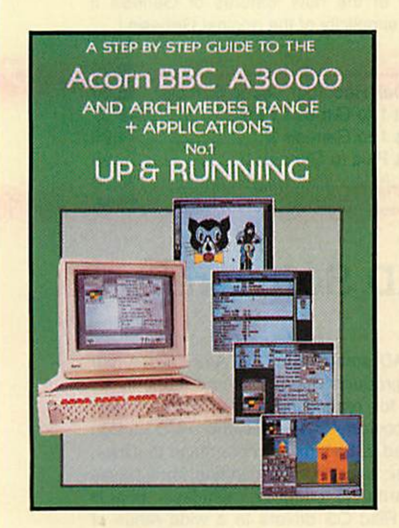
Real pyramids are pretty boring according to Ray. Apparently you only enter a short way in before the tour operator turns you back. The same is seemingly true of the game. You arrive at the pyramids as a tourist on a tour bus. You can wander around the area, buy an ice-cream if you want, check out the pyramids and shop for souvenirs. But there is a belief among some Egyptologists that at least one pyramid contains a secret entrance that nobody has found. As you've probably guessed, you have to find it. At this point in the game, you can drop the tourist pleasantries and get down to some real exploration.

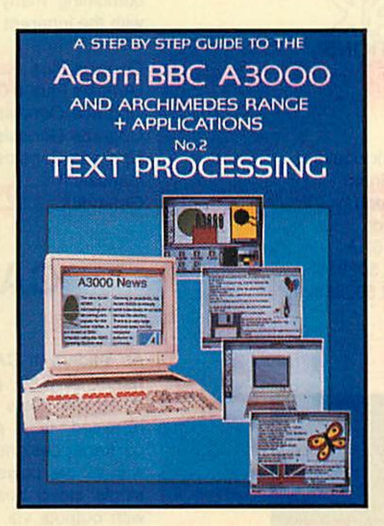
There is a serious side to the game, one that has been picked up on by both the British Museum and the Museum of Cairo. Apart from the title screen, there is no English to be found in the game – it's genuine hieroglyphics all the way, making the game a potentially explosive educational tool. To complete the game you have to learn the ancient language of hieroglyphics as you play, though the abundance of clues means that this is not too difficult.

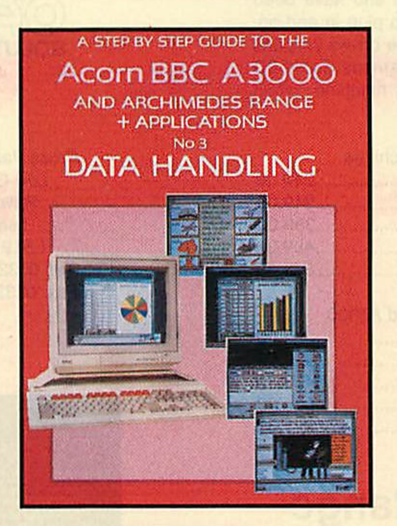
Tale of Anubus is currently in progress and there are doubts as to whether it will be completed in time for Christmas. Ray is adamant that it will, and he's a pretty determined sort of guy. Couple this with a bit of luck and we might be fortunate

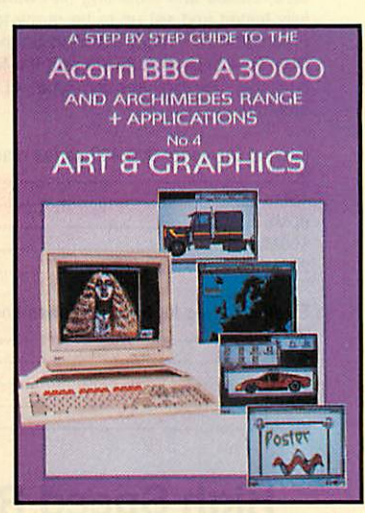
THE FIRST INSTRUCTIONAL VIDEOS
FOR THE ACORN BBC A3000 AND ARCHIMEDES SERIES

A STEP BY STEP GUIDE TO LEARNING
THE EASY WAY WITH EXPERT VISUAL TUITION









No.1 UP & RUNNING

This video introduces you to your Acorn A3000 computer; it will take you through connection and show you how to get **UP & RUNNING.**

The Acorn A3000 is one of the Archimedes family, a powerful new breed of microcomputer, which allows you to do more than one activity at a time (multitasking), by using windows and the RISC Operating System. It is controlled by mouse and pointer which makes it fast and easy to use and its menus are intuitive in use. It's adaptable, educational and it's FUN! If you've never used a computer before, you'll be suprised how quickly you'll take to this one.

The video will show you, amongst other things, how to load and run software, how to save to disc, how to print, how to configure your computer to suit your own needs and gives an introduction to many of the operations and activities necessary to get the best out of your A3000. It also includes a look at several of the more powerful programs from the Applications discs provided with your computer, **Edit** - a simple text editor, **Paint** - a pixel-based art graphics program and **Draw** - an object-based graphics program which will produce posters, charts etc.

No.3 DATA HANDLING

Data Handling is the processing and presentation of information, although the introduction of microcomputers did not bring about the introduction of data handling. Whether we realise it or not, as an age-old activity, we all collect and process information for one reason or another. What the computer has done is provide easy access to, and use of, an extremely powerful means of processing data and the opportunity to spend more time analysing the meaning of the information, testing hypotheses and seeking answers to questions. This, coupled with the Acorn A3000's speed and ability to display information graphically in a professional way makes data handling an exciting proposition for the home user.

This video looks at an introductory data handling package called **DataSweet** which includes a graphics presentation application, various databases - electronic card index systems for sorting and classifying, for example, addresses, lists, record and tape collection details etc., and a simple spreadsheet - an electronic balance sheet for personal finances, banking etc. Using the RISC Operating System, data can be easily transferred between these programs and resulting graphs can be exported for use in reports produced in word processing and DeskTop Publishing programs.

For the user who may require more sophisticated software, the video looks at **Squirrel** which is a desktop database for the Acorn A3000 and **Schema** which is a RISC OS spreadsheet.

A "demo" of text, graphics, sound and animation brought together in linked pages, collectively called Multi-Media, is provided with **Genesis** and **Magpie**.

No. 2 TEXT PROCESSING

Text processing on the Acorn A3000 encompasses word processing and DeskTop Publishing. Text on a word processor is clearly adaptable. The need to rewrite whole texts to make changes is removed and writers can therefore be adventurous; using the A3000 is a means of getting all your ideas 'written' down, giving the chance to go back and polish-up spellings, grammar etc. afterwards.

- ☐ global changes can be made with the word processor,
- ☐ paragraphs can be re-ordered,
- ☐ the printed output from a word processor is neat and professional looking,
- ☐ the writer is freed from the constraints of worrying about handwriting and neatness,
- ☐ planning can be done at the word processor so that notes and lists of words etc. can be typed in the first instance and then fleshed out into drafts later.

DeskTop Publishing is an application which produces high quality text in a variety of page formats, offers a number of different type faces and allows pictures and diagrams to be included with the text.

The Acorn A3000, through its speed and flexibility, lends itself to Text Processing, which means there is a wide variety of Text processing applications available for this microcomputer. In this film, word processing is introduced through **First Word Plus**. For the younger user, a word processor called **Phases#2** is explored which is half-way towards DeskTop Publishing. For the more serious user **Ovation Professional DTP** is examined. The **Technoscan II** handscanner is briefly introduced here and covered more fully in the Video 'Art/Graphics on the Acorn A3000'.

No. 4 ART/GRAPHICS

There is no doubt that the Acorn A3000 is a superb art/graphics computer because of its speed and ease of use and its ability to multi-task (do more than one activity at a time). The use of a computer for art allows a more flexible approach as changes can be easily made and undone at the press of a button and with the Acorn A3000 you can have a palette of 256 colours at your fingertips!

In this film handscanning is explored using the **Technoscan II** handscanner. Scanning allows pictures and drawings to be electronically copied from the printed page to be used on the computer in other applications. These images can be 'cleaned up' in **Paint** and altered in various ways by exporting them into an art package. **Revelation** is such a package where original work can be created, or prepared pictures can be processed and then used in DTP. Some packages such as **Poster**, which is looked at in the film, will allow you to create your own posters from A5 size up to A0 and will allow you to create your own special effects by bending and reshaping pictures and text before exporting them to another package like DTP. Exploit the speed and power of your Acorn A3000 with Art & Graphics!

ONLY £14·99 EACH DELIVERY FREE

TICK APPROPRIATE BOXES FOR YOUR SELECTIONS

NO. 1 UP & RUNNING ☐ No. 2 TEXT PROCESSING ☐ No. 3 DATA HANDLING ☐ No. 4 ART & GRAPHICS ☐

PLEASE ALLOW 10 DAYS FOR DELIVERY

ALSO AVAILABLE FROM W. H. SMITHS, BOOTS, JOHN MENZIES, INCLUDING OTHER MAJOR HIGH STREET OUTLETS AND COMPUTER DEALERS

YOU MAY ORDER BY CREDIT CARD EXPIRY DATE ....

PLEASE DEBIT MY ACCESS/VISA NO. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

OR ORDER ON OUR CREDIT CARD HOT LINE: **071 231 8271**

I ENCLOSE A CHEQUE/PO FOR .... FILMS PAYABLE TO:
PEDIGREE FILMS LTD. B11 TRINITY BUSINESS CENTRE
305 ROTHERHITHE ST. LONDON SE16 1EY

NAME: ____________________

ADDRESS: ____________________

____

POSTCODE: ____________________

TELEPHONE No.: ____________________

Worra Winnies

An Impressive combination of quality SCSI hard disc drives combined with our best selling 16 bit SCSI card to give superb performance and reliability at a price you can afford. All drives are supplied with controller card, cables and mounting hardware and have been fully tested and set up to be ready to plug in and go. Free software already installed on the drives includes Disc Tree backup software and the famous Euclid 3D package. Please specify type of machine when ordering.

Internal Drives for 300/400 series machines	
20Mb	249.00
45Mb	349.00
80Mb	389.00
100Mb	489.00
200Mb	875.00

External Drives for 300/400 series and A3000	
20Mb	325.00
45Mb	429.00
80Mb	469.00
100Mb	569.00
200Mb	925.00

High Speed Range

Our high speed drives come with a 24 month guarantee and offer superior performance. They are particularly suitable for important 'disc intensive' tasks such as fileserving and are ideal for use with Acorn's Level 4 fileserver software. Drives are supplied with our 16 bit SCSI card and are ready to plug in and go.

Internal Drives for 300/400 series machines	
50Mb	399.00
100Mb	569.00
200Mb	949.00

External Drives for 300/400 series and A3000	
50Mb	479.00
100Mb	649.00
200Mb	1029.00

Tape Backup Systems

Our tape backup systems are supplied with superb desktop software to allow easy and versatile backing up and restoring of data from all types of hard discs, networks etc. We offer three ranges of streamer with capacities from 20Mb to 1Gb. The low cost cassette based range, the High Speed DC600 based range and out top of the line Elite DAT unit for professional applications.

Cassette range from	595.00
High Speed range from	999.95
DAT range from	2995.00

A3000 upgrades

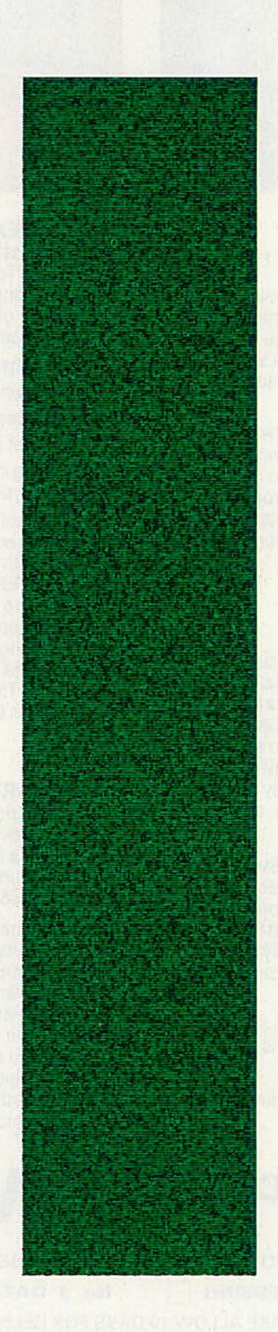
We offer an extensive range of A3000 upgrades, with RAM cards giving 2Mb or 4Mb, and combinations of user port, analogue port and floppy disc buffer fitted on an internal A3000 mini podule card.

2Mb RAM card	65.00
2Mb RAM card upgradable to 4Mb	85.00
4Mb RAM card	199.00

User Port	45.00
User/Analogue Port	54.00
User/Analogue/Disc Buffer	65.00



Cross Park House
Low Green
Rawdon
Leeds
LS19 6HA
Tel: 0532 502615
Fax: 0532 506868



Prices exclude VAT and P&P.

Ring for Education, Bulk and Site Licence Prices.

Multi-Media Software

Our Genesis family of software is the best selling range of multi-media software on the Archimedes and is widely acclaimed for its power and ease of use. Genesis Plus is a new addition to the range combining many of the new features of Genesis II with the inherent simplicity of the original Genesis I.

Genesis Plus	69.95
Genesis Plus + Oak Recorder Sound Sampler	95.00
Upgrade Genesis 1 to Genesis Plus	46.95
Upgrade Genesis 1 to Genesis 2	74.95
Upgrade Genesis Plus to Genesis 2	74.95
Genesis II	130.00
GenIndex	29.95

CAD Software

As leaders in CAD software on the Archimedes, our range of CAD products have become famous for being real tools for real world jobs. Oak PCB, just released, is a powerful new desktop PCB design package, designed to be similar in operation to !Draw, with all the power to cope with anything from simple single sided boards, to complex multi-layer boards with outputs via Risc OS drivers to a wide range of printers and plotters.

Parametric Design Tool	359.00
Worra CAD	99.00
KiddiCAD	99.00
Oak PCB	150.00
Arcsign	80.00
Worra Plotter	29.95

Econet Software

Our expertise in networking on Archimedes is unrivalled, and we have a range of products to enable to get the most out of your network. ClassROM is a combination of software and hardware that removes the load of application serving from the network and allows machines to be remote controlled from one station. ClassPrintLD allows Computer Concepts' Laser Direct printers to be used as network printer servers.

Disc Sharer (network licence)	137.50
Printer Spooler (network licence)	81.25
Econet Level 4 fileserver	199.00
ClassPrintLD (network licence)	75.00
ClassROM (software/hardware)	POA

Programming Tools

Cambridge Pascal	69.00
ABC version 3 BASIC compiler	69.00
Genesis Script Language Book (no VAT)	14.95

Sound Sampling

The Oak Recorder sound sampler is a low cost way of getting high quality sound samples into your software. The microphone (supplied) simply plugs into the printer port of any Archimedes machine (including A3000s) and the software allows samples to be captured, edited, and transferred to a wide range of software packages. Oak Recorder integrates particularly well with Genesis Plus and Genesis 2, which have inbuilt commands to both capture and play samples from the Oak Recoder.

Oak Recorder	29.95



FUTURE FANTASIES

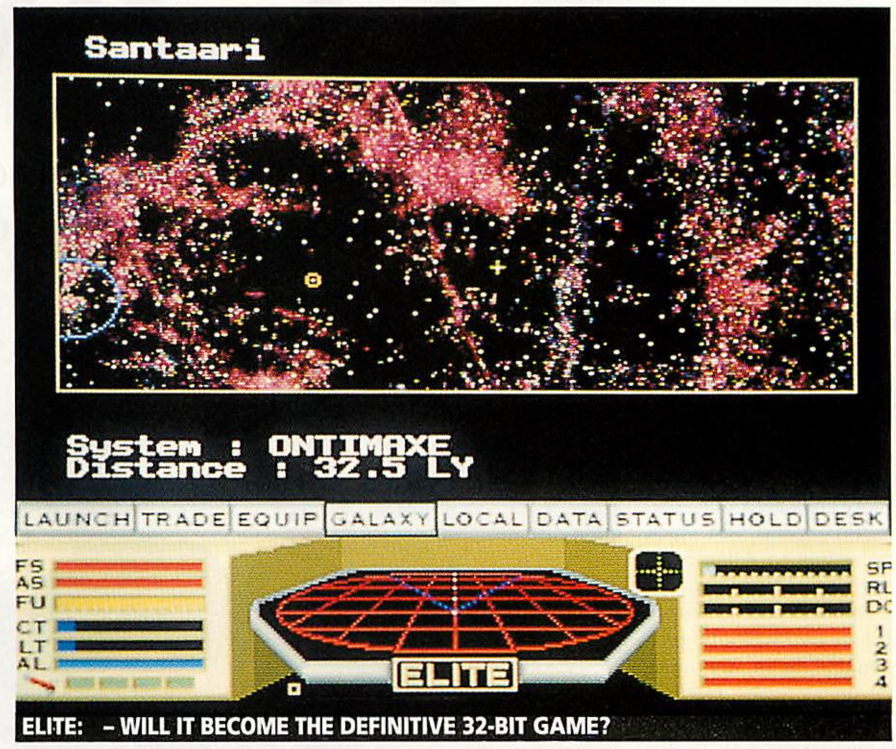
What lies in store for the Archimedes and A3000 games fan? **JIM DAVIS** takes a speculative look into the future

It's undeniably been a good year for the Archimedes, and for the Archimedes game lover. This time last year, the idea of producing a *BAU* games supplement would have been laughable. Now we seem to be spoilt for choice, with at least 135 games freely available.

We're doing well but, I'm afraid, we're not yet doing great. In the real world of mass market games, the Archimedes is a small fish in a big pond. Our choice of games would never satisfy an Amiga user. If you look through any Amiga games magazine, you'll probably find nigh on a thousand readily available games. There's a simple reason for this – there are around 15 times as many Amigas in this country alone as there are Archimedes – and there are virtually no Archimedes in the USA. There is also the survival of the low-priced, but admittedly sub-standard, Atari ST to be considered. Naff it may be, but it runs on a standard 16-bit processor, just like the Amiga. This makes Amiga-Atari cross- conversion highly viable, especially for fast machine-code programs.

The light at the end of the tunnel is that there are now just enough Archimedes users in the UK to justify the routine cross-conversion of 68000 games to the machine, particularly those written in a high-level language like C. We can expect a flood of such games, from *Populous* to *Bard's Tale 2*, in the coming year and they are sure to radically alter our perceptions of what constitutes a good game. The Amiga game world is highly competitive – weak games go to the wall, and shelf lives can be very short. The Amiga mass market, indeed, is what drives the evolution of computer games – there just aren't enough Archimedes software houses battling it out to create the vigorous atmosphere needed.

So, can Achimedes games ever give the Amiga a run for its money? There's a lot of scope – the Archimedes is undeniably fast, and a hopeful sign will be the release of the long-awaited *Karma*. Solid-graphics space games have long been greeted with *ennui* in the Amiga world, as they repeat all the well-worn conventions established by *Elite* so many years ago.



ELITE: – WILL IT BECOME THE DEFINITIVE 32-BIT GAME?

Elite was the BBC micro's one great contribution to the greater games world – ask any C64 owner – so perhaps *Karma* may be the product that upholds the honour of Acorn machines. *Elite Generation 2*, although an upgrade, may cause a stir in the Amiga world, too.

Don't expect too much too soon, though. Compared with a 16-bit computer, the Arm2 may be technically superior – it is a superlative number-cruncher – but the Amiga's architecture includes a custom chip, the blitter, that erodes that edge. A blitter can do fast data movement, independent of the main processor, which means that the Amiga can throw graphics around at a rate of up to 16 million pixels per second. This is what makes it ideal for flight simulators and games in general.

The ideal Archimedes game, then, would have to exploit the machine's number-crunching capacity, not just graphics. There is such a class of game, and that is the complex political or economic simulation. These range from 'god games' like *Populous* to more sober, real-world games like Chris Crawford's excellent *Balance of Power*. Such games, which can trace anything from the technological evolution of a tribal society to international relations in the cold war, may just come into their own on the Archimedes.

Which is where *Karma* comes in again. Apart from being a solid-graphic space game, it will also be, by all accounts, a complex simulation: a world in which many things are happening at once, on and off-screen. If *Karma* uses the Arc's true number-crunching power, then the poor old Amiga may not be able to handle the conversion, blitter or no blitter. We'll just have to wait and see.

I wouldn"t like to place any bets on when the first game, written for the Archimedes, will shyly takes its place in the mass market. While we're waiting, let's enjoy what we've got, and look forward to great game-playing future.



INSIDE STORY

To play a computer game is to peer into the mind of the programmer. **SAM GREENHILL** discovered the people behind the play

If you've ever been hooked on a really good computer game then you'll know that the more deeply entrenched you become in play, the more obsolete the real world seems. In fact, according to Allen Marr at the University of California, Santa Cruz it has been clinically proven that the highly popular puzzle game *Tetris* is actually physically addictive because it also demands use of the left hand side of the brain, while most games tax only the right hand side.

People who happily allow themselves to be drawn into this trap can spend days and nights on end ogling at the screen, and are either unaware of the social drawbacks or, if the game is that good, they simply don't care. As a result they are frequently dubbed wireheads or weirdos by the non-computing members of their families, those who are ostensibly normal!

Some play on regardless of any opinion passed on them in their absence, while those who recognise the dangers of such a label tend to sneak the odd game when they think no-one is watching.

How then do we regard the people who actually produce the games in the first place? What really goes on in the software companies that they run? Of course the mentality of a games programmer is beyond the scope of this article or, more accurately, is beyond description altogether. Looking behind the scenes is not likely to reveal the extent to which these people may or may not be weird. Nonetheless, the philosophy of certain software houses can say a great deal about the programs they produce.

If you are new to the Archimedes games world, then Krisalis Software and The Fourth Dimension are two names you will soon come to know well. If you are not so new to this world, then you will already know that I am talking about two major software houses for the Archimedes. But how well do you really know them?



FOURTH DIMENSION OPENING THEIR FAN MAIL

TWO OF A KIND

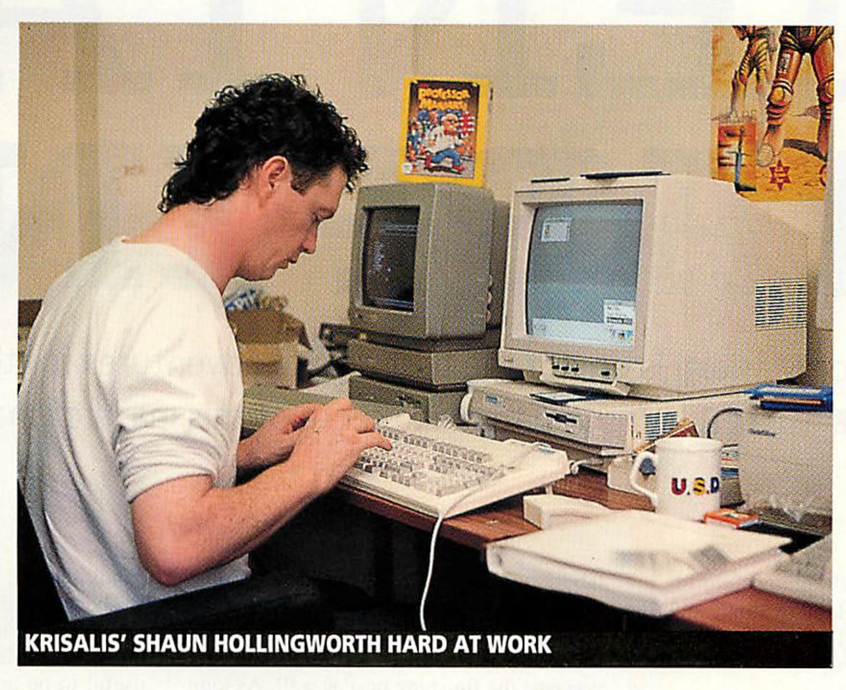
The Fourth Dimension should have at least eight new games out between now and Christmas, and is the biggest software house in the world of Archimedes games. Hot on its heels, however, is Krisalis Software. The company only began publishing games a year ago, but is now beginning to make serious in-roads into the 32-bit scene, with popular programs such as *Lemmings*.

The two software houses could scarcely be more different. Games produced for the Archimedes and A3000 range by The Fourth Dimension will probably never see the light of day on another computer. In contrast, when Krisalis produces a game for the same market you can usually walk into a high street games outlet and pick up copies of the same title for the Amiga, Atari ST, PC and even the Spectrum.

The Fourth Dimension outfit, run by brothers Steve and Mark Botterill, started

two years ago in someone's front room. Now it occupies several sizable offices, mostly stacked full of games, in the city of Sheffield. 'Each time one of our neighbours goes bust we simply take over their office,' explained mild-mannered Steve.

Its offices are entirely given over to the business of administration; there is no software development going on there and the onus is on two people, Rick Sutcliffe and Simon Longley, to keep things running smoothly. In the meantime, the 25 programmers, of whom 15 are currently active, work from home on equipment provided by the company. As well as the 18 or so Archimedes and A3000s in its arsenal, The Fourth Dimension also owns three video cameras, eight sound samplers and 'more copies of the art package *Atelier* than Minerva'.



KRISALIS' SHAUN HOLLINGWORTH HARD AT WORK

As project director, Mark keeps in touch with the programmers, while Steve's job as financial sirector is to prevent Mark spending '£16 billion on the game that's going to save the world', which he has tried to do from time to time

Krisalis takes a different approach. There is only one front room, and that's the reception area. Virtually all games are produced by programmers working in-house, with the obvious advantage that all resources are situated under one roof.

The company is run by three people; Tony Kavanagh, who keeps the books balanced, and Shaun Hollingworth and Peter Harrap who direct the development aspects. Games are created by a whole team of people – Krisalis employs six full time programmers who are assisted by five full time computer graphics artists and one musician. Either the artists are very bad or the musician is very good – I'm assured that the latter is, in fact, the case.

The question is, why does Krisalis find it profitable to convert 16-bit titles when other software houses claim otherwise?

CONVERSION CASE

Shaun explained: 'It's because we can do them quickly and easily. With *Mad Professor Mariarti* Tony said to me that if I didn't convert it before the end of the week he didn't want it. So I did. We've also had experience with the Acorn machine because we coded *Pacmania* and *Terramex* on it four years ago. Other houses have no real experience and so they don't want to commit any programmers.'

Said Tony, 'We wanted to build up a portfolio of Acorn games so that it would become cost effective to advertise. So instead of just converting some of our own titles we decided to go out and head-hunt some of the best 16-bit games, and that's where *Lemmings* came from.

'We approached many other companies producing games for the Amiga and Atari ST and offered them a deal. We would convert and sell their games in the 32-bit format and pay them a royalty for each copy that we sold.'

This strategy appears to be working with gusto. Eight 16-bit software houses have now sold Krisalis the rights to convert their titles, putting the company in a very powerful position. And so, the future looks rosy, but will the Krisalis monopoly reign forever? Shaun said: 'The worrying thing for us is that if we are too successful other companies might decide to convert their games themselves. From the players' point of view, of course, that would be very good, but it would mean that we wouldn't have the same scope of products that we have now.'

The Fourth Dimension on the other hand, has never been interested in converting games. As Mark explained: 'All our games are written because the programmers who write them *want* to write them. It has to be programmer-motivated otherwise our system would fall down.

'An author has a great idea for a game and goes away and writes it. We often don't see anything until it's almost finished. The reason our games are of high quality is because each is written by someone who is absolutely dedicated to that particular game. It's their baby.'

THE 'WRITE' APPROACH

Author Gordon Key is a pool enthusiast whose current baby is the game *Break 147 & Superpool* (see the Top Score feature for more information about this program).

'Gordon did most of the work himself, although we helped him by playing pool in the pub and stealing the rules out of the case on the wall'.

The Fourth Dimension is clear about the sort of people who play its games. Steve sees them as people 'who want to see their machine stretched. They've paid good money for the best machine and they don't just want conversions. They're the sort of people who like to have fun.

'They take the game home and play it all night; they're the ones who like a bit of fun and a bit of humour rather than everything perfect.

'*Chocks Away* is not a flight simulator; it is a whacky game. The person who likes a modern jet simulator that is aerodynamically correct to the nearest nut and bolt is often the business person in the offices who likes something that's a bit flash

'We always try and put something in our games for the player to discover. In *Saloon Cars* you can hoot the horn if you press the right button, and that's not in the manual. We just want people to be sitting there one day when they find the key and suddenly the horn sounds!

'In *Apocalypse*, author Gordon Key tried to create a sound sample that sounded just like the last Prime Minister.

'Whenever he speaks in a high pitched voice, he sounds like Margaret Thatcher. Maybe we all do...,' Mark reflected.

I don't know, maybe these people are weird! But at least you now know who they really are.



MENTAL MAPPING

Mad Professor Mariarti is one of the best arcade adventures for the Archimedes. **ROB MILLER** helps you to make sense of this maze of madness

Every so often, in the games world, a real 'classic-of-its-kind' appears and if you enjoy platform 'n' ladders games, you will probably already know about the *Mad Professor Mariarti*.

Your task in this classic game is to guide the professor around a series of laboratories and close each one down in turn. Unfortunately, the results of the professor's experiments are roaming around - revolting creatures who have no desire to be entrapped.

By solving a number of puzzles in each room, you can finally progress to the challenge of closing down a nuclear reactor and saving the day. Any game of this type can appear complicated; especially with the large area to explore in each laboratory. What's really needed is some kind of map for each level and, as if by magic, there are two in this feature. These should get you started, and may even get you past the finishing post as well. As long as you remember a few basic rules, you should be able to finish the game without resorting to the built-in cheat.

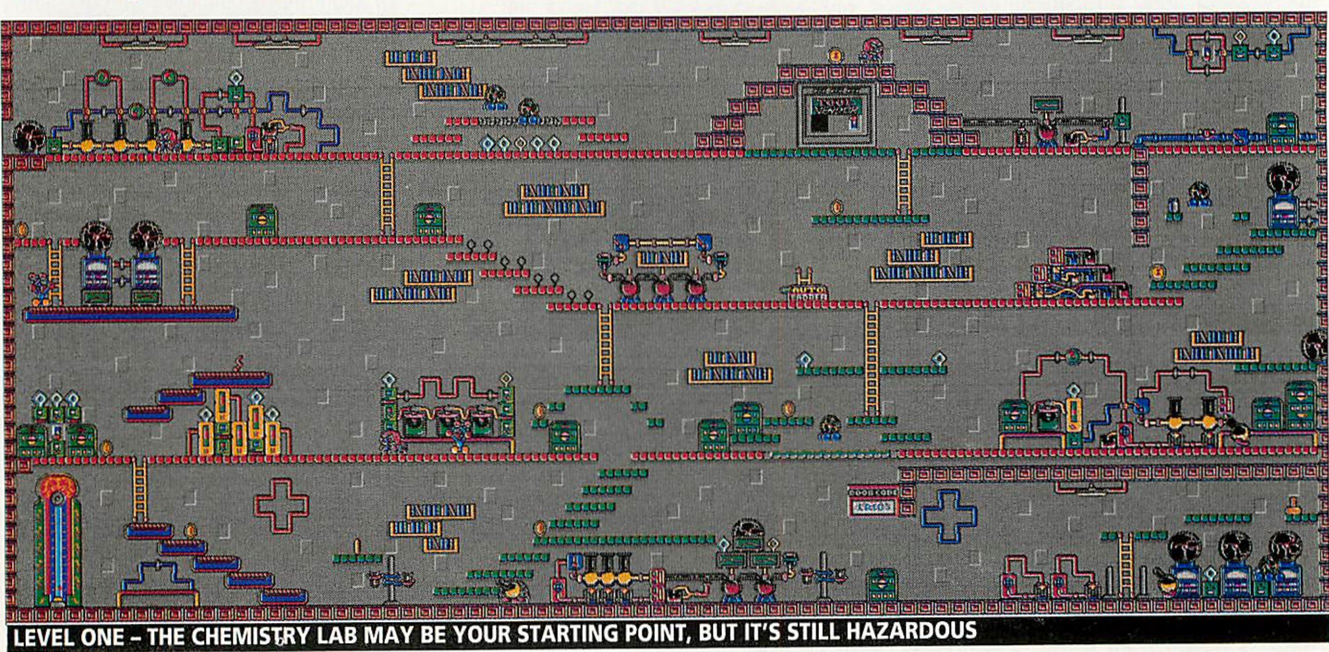
GENERAL TIPS

There are five levels, or laboratories, to visit in order to finish the game; four of them must be completed before moving on to the last one. There is no particular order in which the first four rooms should be entered, but I would recommend starting with the Chemistry Lab first, followed by the Physics Lab, Astronomy Lab and penultimately, the Botanical Lab.

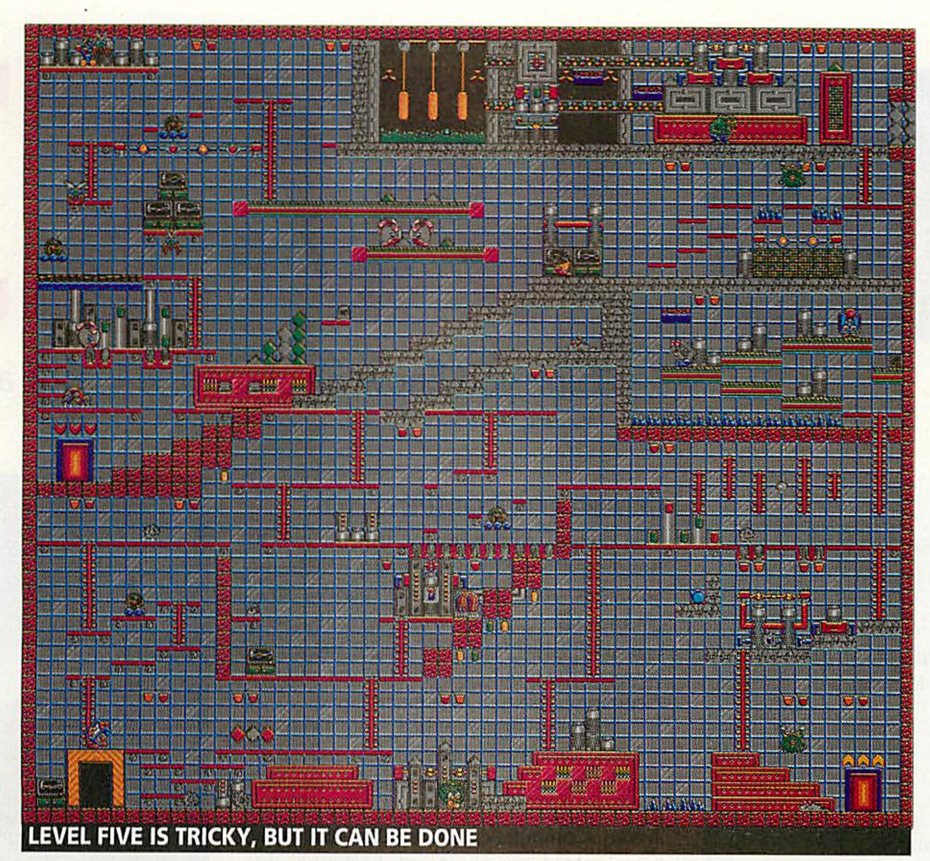
The first rule to remember is this, if it moves, shoot it! In order to make the later levels easier, including the final room, it is useful to be armed with the best available weapon. The least nasty of the nasties can be dealt with using the spanner (the professor's default weapon). And, with a squirt of the lethal Virus Killer, the nastiest nasty will expire in a cloud of smoke.

Weapons are paid for with tokens which can be found around each room. The better the weapon, the more tokens required. The Virus Killer (the best weapon) costs 30 tokens which will require visits to at least three rooms.

The next tip is, look before you leap. The professor has four lives, he can lose a



LEVEL ONE - THE CHEMISTRY LAB MAY BE YOUR STARTING POINT, BUT IT'S STILL HAZARDOUS


LEVEL FIVE IS TRICKY, BUT IT CAN BE DONE

life rather swiftly by coming into contact with too many nasties. For instance you might climb up a ladder, directly into the path of a wandering cabbage. Other hazards to look out for are items of dangerous machinery. It's not a good idea, for instance, to step on anything resembling loose wire, bubbling liquids or other dangerous objects. Each level contains a switch that will, when it is turned off, go some distance towards stabilising the hazardous hardware. Find this switch first if you can. You won't be able to complete the level without doing so in each room.

STARTING OUT

The Chemistry Lab, or level one, contains plenty of problems to solve and nasties to shoot, and it is good place to get some practise in, before moving deeper into the game. There are a number of things you can do and the following steps should guide you through this level. Of course, you can refer to the map if you get lost.

Don't forget, there is no time limit, although the professor may get a little impatient if left waiting around, so as long as you are out of reach of a nasty, you can take your time to get in the right position for a tricky jump or manoeuvre.

It is assumed throughout the following set of instructions that you are familiar with the controls of *Mad Professor Mariarti* and know how to select objects and so on. Note that in order to use an object, you must be holding it and make sure you pick up any tokens on the way.

The route you choose between the steps is not really important and there is usually an obvious way to go. So, once you are in the Chemistry Lab, try out the following:

- Go all the way to the left of the room and flick the switch.
- Go up to the third floor on the far right and collect the jar.
- Go up and left to the top left of the room and collect the strength potion.
- Go down and get the token. Walk right off the platform and drop down on to the conveyor belt to collect the handle.
- Go up to the the Auto Ladder and fix the handle to it. Wind it up and go up the ladder to collect the second jar.
- Go down to the locked door at the bottom right of the room and use jam jars to 'see' the door entry code. Walk to the right and the door will open. Go to the far right and collect the mallet.
- Go across to the far left and hit the 'Test Your Strength' machine with the mallet. As long as you have the strength potion (see above), the bell should ring and you will then be awarded with an oil can. Collect the oil can.
- Go to the top right of the room and oil the water valve. The water will shoot up, lifting you to the switch above. This, in turn, will close the room down.

That should be enough to keep you busy for a while. When you can complete room one, have a go at the other three – you will have to do these in the right order. Rather than give a complete solution for each, this time we left all the problem solving to you. Don't forget that this game is not called *Mad Professor Mariarti* for nothing. All of the objects have a use and some will need to be used together.

When you get to the last room, you're on the home run. Level five can be quite tricky but it is not impossible. Dexterity is the keyword here, especially when jumping between ladders. Of course, having just finished the four previous levels, this should really be no problem.

- Start off by climbing up, walking right and dropping down on to the ledge to collect a pair of shoes.
- Walk right and turn off the switch.
- Go down to the floor, walk to the bottom left of the screen and go up to get a bottle of port. You will notice that to complete steps one to five you need to drop to the floor and climb up the left side of the room.
- Go down and round and get a mirror.
- Go down and round and get the television. Be careful when jumping between separate ladders.
- Go down to the bottom right of the room to the teleport. Use the television and the bottle of port to activate the teleport (Teleport! Geddit!?)
- Go up (using bouncy shoes on springs) to the top left of the room.
- Go right, down and left along the conveyor belts and drop on to the ledge to collect the atomic mask.
- Go to the top right of the room and show the mutant a mirror to scare him off.
- Put on the atomic mask and go in to the reactor and shut it down with a switch.

You should now be looking at the special end message. Take a pat on the back, sit down and think how easy it all was.





WIN

Think you know all about the life of a lemming? If so, you

Question 1
Of the following theories, which four are thought to be possible reasons for mass lemming migration.
- ❑ Suicidal tendencies
- ❑ Seasonal habitat requirements
- ❑ The alcohol laws in Norway
- ❑ Food shortage
- ❑ Boredom
- ❑ Claustrophobia
- ❑ Lunar tidal cycle
- ❑ Overpopulation
- ❑ Going home to Atlantis
- ❑ Magnetic north interference

Question 2
Lemming population explosions occur with measurable regularity. Which one of the answers below best describes the frequency of such explosions?
- ❑ Four times a year
- ❑ Twice a year
- ❑ At sunspot maxima
- ❑ Once every four years
- ❑ Every nine months
- ❑ When the Northern Lights shine

Question 3
When lemmings migrate, roughly how far do they normally travel in one day?
- ❑ 1 mile
- ❑ 5-6 miles
- ❑ 1500-2000 Lemming Strides
- ❑ Until they reach the sea or collapse exhausted trying

Question 4
Why do lemmings enter water?
- ❑ To cool down
- ❑ To get to the other side
- ❑ To exercise
- ❑ They mistake it for vodka
- ❑ To drown
- ❑ Because lemmings are always born under the sign of Aquarius

Send your answers with a tie-breaker caption to Lemmings, BBC Acorn User, Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ

LEMMINGS COMPETITION

You could win a weekend trip for two to Bergen, in Norway, the country where the infamous lemmings can be found – stars of the latest game from Krisalis. The beautiful city of Bergen sits in the crook between the mountains and the sea and is a fascinating mixture of old and new.

The lucky winners will fly out from the nearest airport of their choice and spent three days and two nights in the nations's glorious fjord country, all courtesy of Acorn Computers Ltd. Krisalis Software has donated ten copies of *Lemmings* for the Acorn 32-bit range to be given out to the ten runners up.

All you have to do to win a prize is correctly answer the four questions on the left and complete the tie-breaker. Our learned lemming expert has prepared a few words below as an introduction to the real lemming, but don't be surprised if you end up delving into an encyclopaedia: we haven't given away much!

NORWAY LEMMING

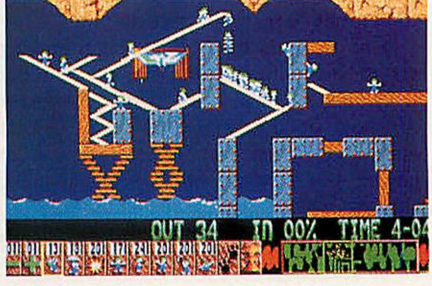
Lemmings are small furry rodents that eat grass and have large families. The Norway Lemming lives in the cold Scandinavian hills and is the species of lemming that is famed for its apparent tendency to commit suicide en masse. Except that it doesn't.

Lemmings do not voluntarily die. It happens when the lemmings decide to move home, to migrate to another place. Several thousand lemmings pack up and leave, and they head down the hills towards the water.

Researchers – those brave souls who camp out in the cold Scandinavian hills, to watch the little rodents – still do not know exactly what causes a mass migration. It usually occurs following a 'population explosion', when lemming mothers can give birth to up to 50 babies.

The ensuing exodus is very disorganisèd. Usually there is such a frenzy that the lemmings swarm towards the water in a large pack, often damaging the local wildlife on the way.





A TRIP TO NORWAY'S FJORD COUNTRY

could win yourself a weekend in the scenic setting of Norway's fjord country



Rules of participation

1. No purchase necessary.
2. Instructions form part of the rules.
3. Responses will be deemed to be correct only when the items ticked correspond exactly to those on the official answer sheet held by the editor.
4. Participants may not be direct employees of Redwood Publishing, Acorn Computers Ltd, BBC Enterprises, or their nominated representatives, agents, or connected with the administration in any way.
5. Closing date for competition entry is 1 December 1991. The first eleven entries drawn out will win prizes as stated above, in descending order.
6. Prizes are non-transferable or redeemable for cash or other goods and services.
7. Redwood Publishing and/or its agents is not responsible for any tax or other claims made on participants winning prizes under this competition.
8. Redwood Publishing reserves the right to amend or discontinue part or all of this competition at any time, without recompense.
9. The editor's decision is final.
10. Redwood Publishing and/or its agents is not liable for any loss, damage, or injury of any nature sustained in any way by any participant under this competition.

TIE BREAKER

The cartoon shows one of our foolish little lemming friends, on his way down to the watery depths. What we want you to do is look at the picture and put yourself into a lemming's shoes. What would you say while hanging precariously from a cliff? Fill in the speech bubble with the wittiest comment you can think of, to complete the tie-breaker.



ILLUSTRATION BY GARY WING

WHO'S WHO IN GAMES

With numerous games on the market, here is the definitive buyers' guide

Acheton Topologika
Air Supremacy Superior Software
Alerion Alien Images
Alien Invasion Alien Images
All-in Boxing Alien Images
ALPS System Alpine Software
Apocalypse The Fourth Dimension
Arcade Games Creator Alpine Software
Arc Pinball Shibumi Software
Arcade 3 Compilation Clares
Arcade Soccer The Fourth Dimension
Arcendium Alien Images
Avon Topologika
Ballarena Eterna
Bambuzle Arxe
Battle Tanks Minerva
Blaston Eterna
Blitz Arxe
Blowpipe Eclipse
Boogie Buggie The Fourth Dimension
Bouncer RTFM
Break 147 & Superpool The Fourth Dimension
Bubble Fair Eterna
Bug Hunter Minerva
Bug Hunter in Space Minerva
Casino Minerva
Caverns Minerva
Chess 3D Micropower
Chocks Away The Fourth Dimension
Chocks Away Extra Missions The Fourth Dimension
Chuck Rock Krisalis
Confusion Cambridge International Software
Conqueror Superior Software
COPS Alpine Software
Corruption Magnetic Scrolls
Countdown to Doom Topologika
Crisis Cambridge International Software
Denis Wheatley: Herewith the Clues CRL
Dominate RTFM
Drop Ship The Fourth Dimension
Enter the Realm The Fourth Dimension
E-Type The Fourth Dimension
E-Type Designer The Fourth Dimension
E-Type Extra 100-miles The Fourth Dimension
Enthar 7 Robico
Family Favourites Minerva
Fine Racer Eterna
Fireball Cambridge International Software
Fireball 2 Cambridge International Software
Fish Magnetic Scrolls
Freddy's Folly Minerva
Fugitive's Quest Robico
Guild of Thieves Magnetic Scrolls
Holed Out The Fourth Dimension
Holed Out Designer The Fourth Dimension
Holed Out Extra Courses (1+2) The Fourth Dimension
Hostages Superior Software
Hoverbod Minerva
Ibix the Viking Minerva
Inertia The Fourth Dimension
Interdictor Clares
Interdictor 2 Clares
Iron Lord Cygnus Soft
Jahingar Khan's World Championship Squash Krisalis
James Pond Krisalis
Jet Fighter Minerva
Jinxter Magnetic Scrolls
Kaptain Konflikt Calderglen Computers
Last Days of Doom Topologika
Lemmings Krisalis
Mad Professor Mariarti Krisalis
Maddingly Hall Minerva
Mah-Jong Patience Cambridge International Software
Man at Arms The Fourth Dimension
Manchester United Football Club Krisalis
Manchester United Europe Krisalis
Master Break Superior Software
Memory Magic Cambridge International Software
Microdrive Cambridge International Software
MiG-29 Fulcrum Domark
MiG-29M Super Fulcrum Domark
Minotaur Minerva
Missile Control Minerva
Nevryon The Fourth Dimension
No Excuses Arcana
Olympics, The The Fourth Dimension
Orion Minerva
Overload Clares
Pacmania Domark
Pawn, The Magnetic Scrolls
Philosopher's Quest Topologika
Pipemania Empire
Poizone Eterna
Pon! RTFM
Powerband The Fourth Dimension
Provocator Computer Tutorial Services
Pysanki The Fourth Dimension
Quazer The Fourth Dimension
Redshift Minerva
Rekall RTFM

Repton 3 Superior Software
Return to Doom Topologika
Rise in Crime Robico
Rotor Arcana
Saloon Cars The Fourth Dimension
Scorpius Arxe
Slappit RTFM
Sporting Triangles CDS
Square Route Computer Eyes
Star Trader Alpine Software
Starch Alien Images
Stranded Robico
Superior Golf Superior Software
Tactic Eterna
Talisman Minerva
Terramex Krisalis
The Thing of Darkness Eterna
Thundermonk Minerva
Top Banana Hex
Trivial Pursuit Domark
Twin World Cygnus Soft
U.I.M. The Fourth Dimension
White Magic The Fourth Dimension
The Wimp Game The Fourth Dimension
Winter Box RTFM
Wonderland Virgin
Word Up Word Down Alpine
World Champion Boxing Manager Krisalis
World Class Leaderboard US Gold
Worldscape Eclipse
Worra Báttle Oak Solutions
Y Hex
Zarch Superior Software
Zelanites Micropower

GAMES SOFTWARE HOUSES

Alien Images 22 Warwick Street, Prestwich, Manchester M25 7HN Tel: 061-773 8632

Alpine Software PO Box 25, Portadown, Craigavon BT63 5UT Tel: (0762) 342510

Arcana Available from Acorn dealers

Arxe Games PO Box 898, London E7 9HJ Tel: 081-534 1198

Calderglen Computers 13 Shenval House, Templefields, South Road, Harlow CM20 2BD Tel: (0279) 418883 Fax: (0279) 417259

Cambridge Internatinal Software (C.I.S.) Unit 2A, 436 Essex Road, London N1 3QP Tel: 071226 3340

CDS Available from Acorn dealers

Clares 98 Middlewich Road, Rudheath, Northwich, Cheshire CW0 7DA Tel: 0606 48511 Fax: (0606) 48512



Computer Eyes 16 Starnes Court, Union Street, Maidstone, Kent ME14 1EB Tel: (0622) 751096

Computer Tutorial Services, 4 Mill Hill Road, Cowes, Isle of Wight PO31 7EA Tel: (0983) 294333 Fax: (0983) 298439

CRL Available from Acorn dealers.

Cygnus Soft 11 Newarke Street, Leicester LE1 5SS6 Tel: (0533) 559711 ex 287

Domark Ferry House, 51-57 Lacy Road, London SW15 1PR Tel: (081) 780 2222

Eclipse Burcott Manor, Wells, Somerset BA5 1NH, Tel: (0243) 531194 Fax: (0243) 531196

Empire Software Unit 4, The Stannetts, Laidon North Trade Centre, Basildon, Essex, SS15 6DJ Tel: (0268) 541126

Eterna Vector Services, 13 Denington Road, Wellingborough, Northants NN8 2RL

The Fourth Dimension 1 Percy Street, Sheffield S3 8AU Tel: (0742) 700661

Hex PO Box 737, London SE5 9JG Tel:(071)701 0652

Krisalis Software Ltd. Teque House, Masons Yard, Downs Row, Moorgate, Rotherham S60 2HD Tel: (0709) 372290 Fax: (0709) 368403

Magnetic Scrolls Available from Acorn dealers.

Micropower Ltd Northwood House, North Street, Leeds LS7 2AA Tel: (0532) 458800 Fax: (0532) 423289

Minerva Software Minerva House, Baring Cresent, Exeter, Devon EX1 1TL Tel: (0392) 437756 Fax: (0392) 421762

Oak Solutions Cross Park House, Low Green, Rawdon, Leeds LS19 6HA Tel: (0532) 502615 Fax: (0532) 506868

Robico Software 3 Fairland Close, LLantrisant, Pontyclun, Mid-Glamorgan CF7 8QH Tel: (0443) 227354

RTFM 43 Hill Street, St Helier, Jersey

Shibumi Software 3 Parkfield Road, Long Buckby, Northampton NN6 7QJ, Tel: (0392) 437756 Fax: (0392) 421762

Superior Software PO Box 6, Brigg, Humberside DN20 9NH Tel: (0652) 58585

Topologika PO Box 39, Stilton, Peterborough PE7 3AL Tel: (0733) 244682

US Gold Available from Acorn dealers

Virgin Available from Acorn dealers

Create the GRAND ILLUSION



With this brand new 3-dimensional graphics package you can create any object, of any colour and texture, illuminate it with coloured lights or spotlights.

The image can be rendered in any 256 colour screen mode and a special colour mixing algorithm enables Illusionist to display 'infinite' number of colours.

Even better, you can map full screen Mode 12 or Mode 13 sprites onto any object. The result, is tone and texture as subtle or as bold as you like, perfect shapes, shadows and shade on any image you create.

The stunning quality graphics you produce gives the illusion of being produced on much more expensive graphics hardware.

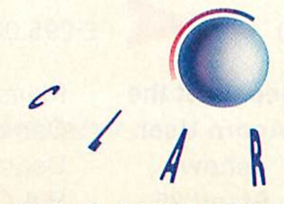
For further information please telephone or write to the address below, we'll send you a fact pack that will give you the complete picture.

And what a superb picture it is.

Price – £99.95 inc. Vat – from all good dealers or direct from Clares.

We accept Access and Visa.







98 Middlewich Road, Rudheath, Northwich, CHESHIRE CW9 7DA. Telephone: 0606 48511 Fax No: 0606 48512



Mathematics and Special Needs

Materials to support Key Stages 2 & 3

from



Modules include:

Handling Data - an introduction
Roamer Maths
Learning About Shape
Learning About Symmetry
Number Games
How can I ...? An approach to Logo

Set of six - £30.00

For further information contact:
NORICC ◆ Resources Centre
Coach Lane Campus ◆ Coach Lane
Newcastle upon Tyne NE7 7XA
Telephone: 091 270 0424



!INSPIRATION

The most comprehensive music sequencing package available for the Archimedes.

Come and visit our demonstration area, or phone for a demo disc. Fully Risc OS compatible. Purchase with Archimedes (special price), or simply add it to your existing system. All you need is a MIDI interface.
!Inspiration offers a control panel featuring: Replace and Overdub record modes ● Cue Start and End ● System Status Display ● Multiple Save capabilities, and many other features. **Version 1.03 now being supplied**

CLARES

Armadeus Sound Sampler

Rhapsody Score Editing (new version)

DTP	
Impression II (CC)	145.00
Impression Junior (CC)	74.00
Impression Business Supplement	45.00
Tempest (Clares)	99.00
Ovation (Beebug)	99.00
DATABASES	
Multistore (Minerva)	190.00
AlphaBase (Clares)	36.00
System DeltaII Minerva	55.00

SOME GAMES

Alien Invasion (AI)	16.00		
Apocolypse (4th Dim)	21.00	Hostages (Superior)	15.00
Apocolypse (4th Dim)	25.00	Inertia (4th Dim)	16.00
ARCticulate (4th Dim)	21.00	Interdictor II (Clares)	36.00
Blowpipe (4th Dim)	16.00	Jigsaw (4Mation)	28.00
Boogie Buggy (4th Dim)	21.00	Mig 29 (Domark)	34.00
Break147 (4th Dim)	21.00	Nevron (4th Dim)	16.00
Chess 3D (Micropower)	16.00	Powerband (4th Dim)	21.00
Chocks Away (4th Dim)	21.00	Pysanki (4th Dim)	16.00
Chocks Away Compendium	30.00	Saloon Cars (4th Dim)	21.00
Chocks Away Extra (4th Dim)	16.00	The Real McCoy (4th Dim)	25.00
Drop Ship (4th Dim)	16.00	The Real McCoy II (4th Dim)	25.00
E-Type (4th Dim)	16.00	The Wimp Game (4th Dim)	16.00
E-Type 100 miles (4th Dim)	14.00	U I M (4th Dim)	25.00
Fine Racer (Eterna)	16.00	White Magic (4th Dim)	16.00
Holed Out (4th Dim)	16.00	Zarch (Superior)	16.00
Holed Out Vol 1 or 2 (4th Dim)	14.00		

Archimedes Computer Systems

A3000	550.00
A3000LC	650.00
410/1	1,050.00
420/1	1,250.00
440/1	1,600.00
540	2,900.00

All come with Desk Top Office from Minerva (WP, spreadsheet, database, chart, comms), and extra 1meg of Ram. Larger machines with printer or monitor.

Ram Upgrades	
A3000 upgrade to 2Mb	60.00
A3000 upgrade to 4Mb	170.00
A410/1 upgrade to 2Mb	59.00
A410/1 upgrade to 4Mb	112.00

EIZO MONITORS	
Eizo 9060	399.00
Eizo 9070	599.00

For other products please ring for prices



153a Victoria Street, St Albans, Herts AL1 3TA
Telephone 0727 50075 Facsimile 0727 58977
Please add VAT to all above prices

Innovative upgrades for Acorn computers

P.C. Connect

Allows a P.C. and an Archimedes to share:
- Monitor & keyboard
- Printer
- Hard disc drive
- Via a 1MB/sec custom parallel link

so you can add hardware P.C. processing power to your Archimedes setup at the lowest possible cost.

£ 169.95 With 20MHz 386SX P.C.: £ 449.95

Scanners

High performance scanners:
- From 8 to 16 million colours
- From black and white to 256 levels of grey
- From 25 to 400 or 600 d.p.i. resolution
- Halftoning, gamma and colour correction
- High-speed parallel interface
- RISC-OS compliant scanning software
- Free tracing software

400 d.p.i.: £ 1299.00 600 d.p.i.: £ 1699.00

Canon Ion

Electronic still camera:
- Takes colour pictures
- Stores up to 50 on one 2" floppy disc
- Replays pictures on monitor or T.V.
- Video digitiser to load images into computer
- RISC-OS compliant digitising software
- Image enhancement software
- All batteries, chargers, leads etc. included

£ 699.00 Without camera: £ 299.00

A540 4MB

4MB RAM upgrade for A540:
- Expand memory to 8, 12, 16 MB
- More room for DTP
- Improves RISC iX performance
- User upgrade - just plugs in
- Fitting available if required
- Four-layer card for reliable operation

£ 295.00

D.T. Software

FREEPOST, Cambridge. CB5 7BR
Tel / fax: (0223) 841099

See us at the Acorn User show. Stand 25

Please add 17.5% VAT.
Carriage is included.
Dealer enquiries welcome.
E & OE.

SCREEN TEST

The A3000 is playing a major role in a new BBC television series. **DAVID WATKINS** takes you behind the scenes to see how it was used

Explaining about fundamental mathematical software to a class of seven to nine-year-olds is now the subject of a new television series. It's called *Mathscope* and the 10 programmes aim to support children working at levels two to four of Key Stage 2. The programmes aim to consolidate their current work and provide mathematical adventures to further their understanding of the subject. The underlying theme reflects the use and application of mathematics as seen in everyday life.

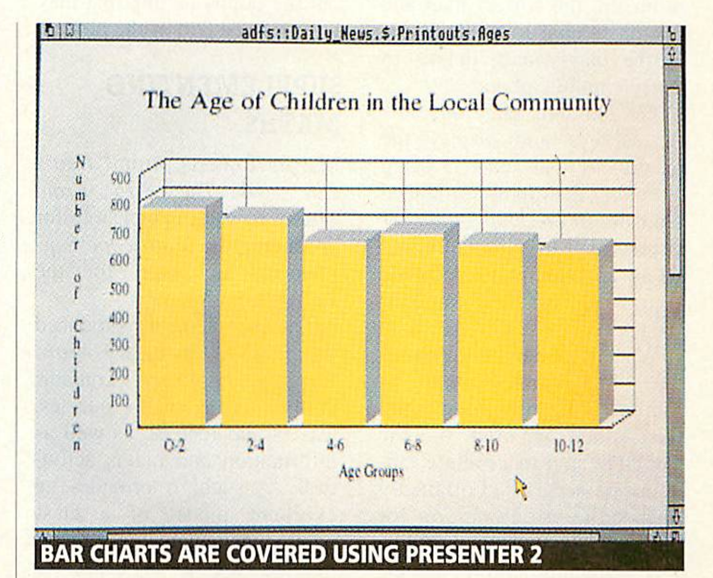
FORWARD PLANNING

At present, the most common primary school computer is the Master 128, but there are still many model B machines in use and the A3000 is increasingly used in primary schools. This created a immediate dilemna for the production team, who had to decide whether to use the familiar BBC Master 128, or the newer A3000, to demonstrate the technology available. They also had to take another point in to account – the fact that the series would probably have a transmission lifetime of about four years, which could be extended by up to two years, with the use of video recorders in schools.

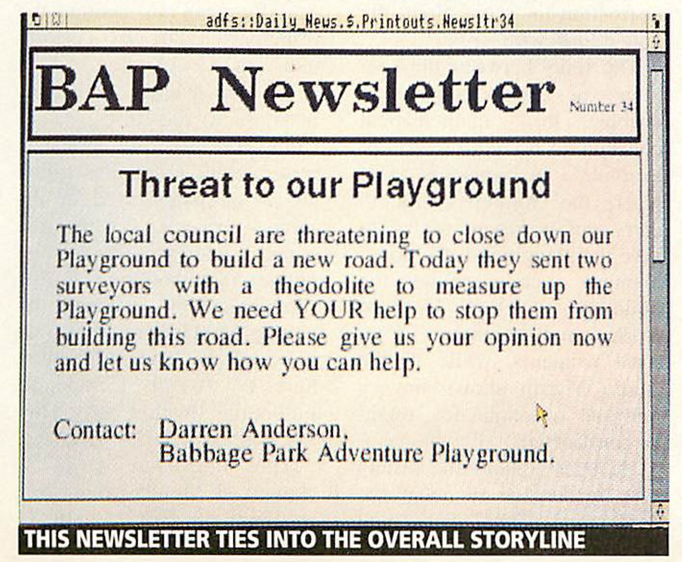
The A3000 had two obvious advantages. It provides a superior output for television viewing, and in educational terms the Wimp interface of Risc OS is relatively easy for children to master. These considerations, together with the expected lifetime of the series and the increasing use of the machine in schools, led to the A3000 being chosen as the computer used in the series.

When the series was still in its planning stage the producer, Julia Drum, explored the possibility of using currently available software. The production schedule and budget restrictions meant that it would be impossible to commission software for the series and as BBC Education Officer, I had access to all BBC Soft titles – these are programs originally produced by BBC Enterprises and now published under licence by Longman Logotron.

However, I had no money to buy other software and I was relying on software publishers to provide us with copies of their programs. As the outline of the series began to take shape, I looked for opportunities to include relevant use of the A3000 and telephoned a number of software publishers to see if they could help.



BAR CHARTS ARE COVERED USING PRESENTER 2



adfs::Daily_News.$.Printouts.Newsltr34

BAP Newsletter Number 34

Threat to our Playground

The local council are threatening to close down our Playground to build a new road. Today they sent two surveyors with a theodolite to measure up the Playground. We need YOUR help to stop them from building this road. Please give us your opinion now and let us know how you can help.

Contact: Darren Anderson,
Babbage Park Adventure Playground.

THIS NEWSLETTER TIES INTO THE OVERALL STORYLINE

I wanted to show adventure programs, a bar code reader, Logo, databases, spreadsheets, wordprocessing, desktop publishing, drawing and painting packages. I also wanted some specific maths programmes, such as *Maths With a Story*. The decision to use available software in the series, rather than specially commissioned material, means that teachers can use the same packages in the classroom during their follow-up activities.

It was decided that each programme should consist of four linked sections: an on-going drama featuring children using maths, an animation highlighting mathematical concepts, a documentary showing how maths is used in ordinary situations and a studio-based presenter to provide continuity and link the other sections of the programme together.

Hands off our Playground

A LESSON IN DTP METHODS

Neither the animations, which feature a piece of string called O'Liney, nor the documentaries offer any opportunity to use the A3000, but the studio and drama sections do.

ACTION REPLAY

The adventure is set in Babbage Park Adventure Playground and focuses on the activities of four children. An A3000 and a *Deskjet Plus* printer is located in the playground offices and used by the children, in particular Darren, who is responsible for producing a regular newsletter with *Acorn Desktop Publisher*.

The instructions for a Mathstrail are produced in the first episode using *PenDown 2* and the Save Our Playground posters are produced in the last two episodes when the park is threatened with closure. Page

layout and poster design both involve require measuring and spatial awareness skills and these are re-inforced throughout the series.

Draw was used to create local street maps and a set of road signs – these were later used to create a database with *Genesis*. As part of programme three, the wrong map is sent to the photographer and as a result he gets lost. Omar prints out the correct map and Darren is able to guide Barry to the playground, thanks to Barry's mobile phone.

The children carry out traffic surveys and display the results as bar charts using *Presenter 2*. A report produced with *Acorn Desktop Publisher* is presented to the local council in an attempt to persuade them to change their plans for the park.

When Babbage Park Adventure Playground holds its Summer Fair in episode eight, the A3000 is used on the Tombola stall to generate random numbers. I had originally intended to use *Numerator* for this task but was asked to provide something more colourful. Unable to find an acceptable commercial package, I wrote one myself and this is the only time in the series that non-commercial software is used.

I used *FontFX* for the logo, captured the numbers from *Edit* as sprite files using *Paint*, and borrowed two sound samples from *Armadeus*. A short Basic program of about 40 lines displays the logo, plots colourful circles and rectangles, selects numbers at random and plays a fanfare as the numbers come up. All this took less than two hours work, from start to finish.

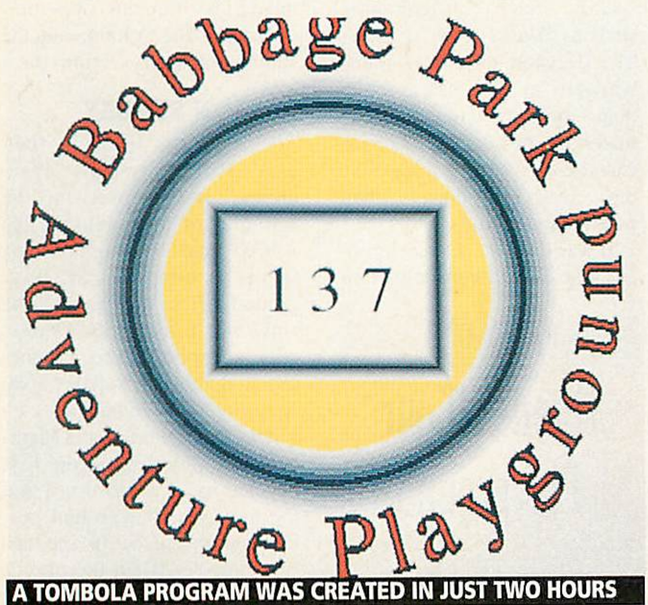
With the exception of the last two programmes, the drama sections are complete in themselves. This means that teachers can choose to show the programmes of relevance to their own curriculum, without the pupils feeling that they have missed part of the plot.

SUPPLEMENTING MATHS

Martin Roberts, from *That's Life* and *The 8.15 From Manchester*, is responsible for producing the *Mathscope Supplement*, an insert for the *Local Daily News*.

The supplement, produced on an A3000 using the *Acorn Desktop Publisher*, contains items such as maths puzzles, teasers and recipes, as well as information and maths activities. As such, it provides an excellent model of a class newspaper that teachers might like to use as a basis for follow-up work.

A typical example of a puzzle appears in the seventh programme where children have to convert the time on an analogue clock to the 24-hour format. The clock faces were created with *Draw* and the gridlock option enabled the numerals to be positioned accurately. The clock hands are just thick lines with triangular end caps. The faces were imported into *Acorn Desktop Publisher* and clues were added to help the children distinguish between am and pm.



A TOMBOLA PROGRAM WAS CREATED IN JUST TWO HOURS

STREET MAPS WERE MADE USING THE DRAW APPLICATION

Using a local street map, Martin investigates designing a new delivery route. He realises that if he puts barriers across some of the roads on the map, he can create a maze puzzle for the supplement. The addition of a compass to the map enables the solution to be given with detailed directions.

The combination of *Draw* and *Acorn Desktop Publisher* is used in the fifth programme to produce instructions on how to assemble a die for publication in the *Mathscope Supplement*. The framework of a cube is drawn, complete with tabs plus solid lines to cut along and dotted lines to fold along. Assembly instructions are then added to the page. Observant viewers may notice how Martin interprets the instruction to 'score along the dotted lines with a ruler'.

The links between the sections of each programme enable the mathematical concepts to be reinforced. For example, in episode nine where the children decide to carry out a survey to try to save the playground, the documentary section shows the building of the Dartford Bridge and comments from local residents, while in the studio Martin shows how a relevant questionnaire might be constructed.

He later collates the results of a reader survey about the *Mathscope Supplement* and presents his findings as a bar chart using *Presenter 2*. As the input screen of *Presenter 2* would not have been readable on-screen in a classroom situation, it was necessary to use a DTP screen with 72 point text for the inputting of data.

CONCLUSION

Mathscope is not focused around the A3000, nor does the computer do anything spectacular in the series. It is simply shown as an appropriate tool to use in a variety of situations, by children and adults alike.

In National Curriculum IT terms, the series supports Information Handling, Communicating Information and Applications and Effects at Key Stage 2. Even if teachers do not have access to an Archimedes computer, the principles of word processing, desktop publishing, data handling and graphical display are explained. Since they are actually seen in action, the principles can be clearly understood by children.

To help teachers plan their response to the series, Acorn Computers has published an information sheet describing all the software used in the series, together with the names, addresses and telephone numbers of all the suppliers. It is available by writing to Mathscope Information, Sales and Marketing Service, Acorn Computers, Fulbourne Road, Cherry Hinton, Cambridge CB1 4JN.

The *Mathscope* series is shown on Monday mornings, at 10am on BBC2, until 11 November 1991.

ADC, DAC & Digital Podules

Digital I/O Podule

* 16 TTL compatible inputs.
* 16 TTL compatible outputs.
* 16 bit wide interface.
* Full handshaking facilities.
* I/O Fully programmable.
* SWI calls on ROM.
* Low cost
* Half width podule

ADC & DAC Podules

* 16 differential analogue inputs.
* +/-10 volt input range as standard.
* Sample & hold for each input.
* 12 bits resolution.
* Low noise.
* Sample 1 input at over 100KHz.
* 4 analogue outputs.
* 16 TTL compatible inputs.
* 16 TTL compatible outputs.
* Comprehensive SWI calls on ROM.



Si-Plan Electronics Research Ltd.
Avenue Farm Industrial Estate,
Birmingham Road,
Stratford-upon-Avon,
Warwickshire. CV37 0HR

Digital podule	£150 + VAT
Standard ADC/DAC Podule	£617 + VAT
High speed ADC/DAC Podule	£852 + VAT

Other options and customised software are available by special request.

Telephone or Fax (0789) 205849 for futher information on these or our other products.

CHARACTER REFERENCE

GRAHAM BELL examines the wealth of options open to the font fancier

While the Archimedes does not have the range of typefaces boasted by, say, the Macintosh, the fonts available are of high quality and cover almost all needs. Fonts can be obtained from a number of diffferent places and can make your documents far more visually appealing.

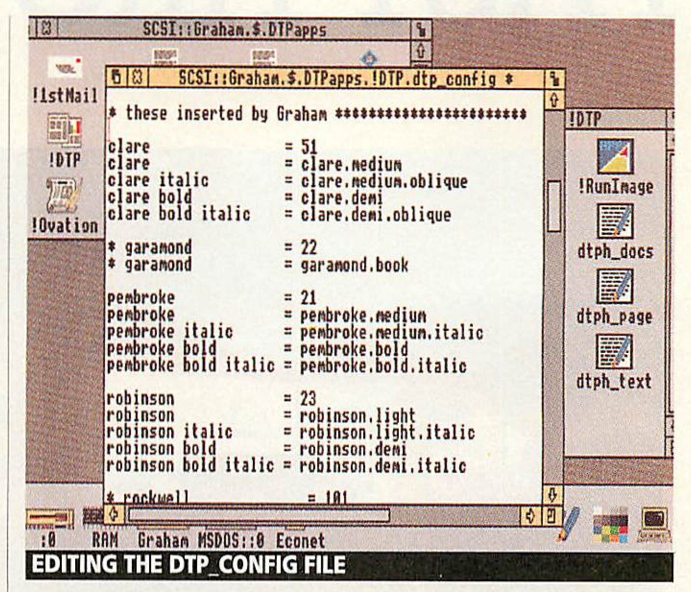
A number of public domain (PD) libraries offer selections of additional typefaces. Although this is a cheap way of obtaining extra fonts, most of them are not as well drawn as the commercial offerings – they do not have a complete character set and they are almost always unhinted. Some are, in fact, illegally converted versions of Macintosh fonts – a common tell-tale sign of this is a flowing f character at character 132 or 135 (type 132 or 135 on the numeric keypad while holding down ALT to get these characters).

ADDING FONTS

If you have purchased an extra font for your Archimedes, it is usually supplied as a folder containing two files called Outlines and IntMetrics.

A family of fonts has several of these files arranged in sub-folders like Bold and Oblique. To add the new fonts, hold down SHIFT and double-click on your main Fonts folder to open it. You will see several sub-folders corresponding to your existing fonts. Drag the new font folder into the window, then double-click on the main Fonts folder again. The new font will be included in the font list alongside all of your old fonts, and it can be used by any applications loaded afterwards.

This is all you need to do if you have a non-Postscript printer, whether it is dot-matrix, ink-jet or Laserjet. Postscript printers require an extra step because they don't understand the modified Acorn



EDITING THE DTP_CONFIG FILE

font names – for instance, Times becomes Trinity on the Acorn. Hold down SHIFT and double-click on the PrinterPS printer driver and drag PSprolog into *Edit*. Make sure that this is not your only copy of the PSProlog file.

The PSprolog file controls the linking of RiscOS fonts to their Postscript equivalents, and for any new font, there are two places in the prologue to add new links.

The first is at the beginning, after '%%DocumentFonts:' – you add any new Postscript names you intend to use. Then at the end of the file, a line like the existing ones must be added, containing both the Acorn and Postscript names. For a whole family of typefaces, you need a line for each one. Follow the style of the existing fonts, and be extra careful as you type Postscript font names – the spelling and punctuation must be exact and the names are case-sensitive.

Some typefaces, particularly those from Electronic Font Foundry, contain characters in addition to those used by Acorn. In this case, the font comes with a new version of PSprolog as the changes necessary are more extensive. In this case, replace your version with the new, but remember, if you added any 'simple' fonts beforehand, add them again to the replacement PSprolog file.

If you use *Acorn DTP*, then any new font added needs to be recorded in a further file. The DTP_config file links Acorn font names to the range of text styles used by Archimedes DTP.

To edit DTP_ config, press SHIFT and double click on the ADTP icon to open the application folder. Then drag the configuration file into *Edit*. DTP_config needs lines added to it, one for the whole typeface family and one for each weight in the family.

Again follow the existing style. The numbers for each family are font numbers used by Xerox's *Ventura Publisherer*. In fact, you can use any number for each family, but your text might change if you transfer it to another machine with different font numbers used in its DTP_config file. A table of the correct numbers is shown below.

POSTSCRIPT	ACORN	BEEBUG	EFF	FONT NO
AvantGarde		Vogue	EFF AQ	51
Bookman		Bookmark	Book	23
Courier	Corpus	Curator	Evenwriter	1
ZapfDingbats	Selwyn		Dingbats	129
FranklinGothic			Franklin	56/57
Helvetica	Homerton	SwissB	Swiss	2
NewCenturySchlbk	NewHall		NewSchBook	20
Optima			Oxford	52
Palatino		Paladin	Michael	21
Symbol	Sidney	SymbolB		128
Times	Trinity		EFF_Times	14
Univers			English	91/93
ZapfChancery		Chaucer	Chance	29

ERRORS

It is possible that adding fonts to your system will cause a number of errors to occur. Many early Archimedes programs cannot cope with the number of fonts you can now add. *Edit*, for example, crashes with an error type 5 if you install more than about 25 fonts. The simplest way around this is to add the line 'Set Font$Prefix ""' just before the Run statement in its Run file.

This limits *Edit* to working in the system font. You must click on the main Fonts folder again after loading *Edit* like this. *Draw* doesn't crash, but won't show more than about 60 fonts correctly on its menu, or won't properly select fonts near the end of the list.

And if you are still baffled by the jargon, take a look at our feature, the A-Z of Fonts, on page 62. The rest should be plain sailing!

RAYERS OF THE FAST ARC

Ray tracing can produce some stunning graphics. **ROB MILLER** looks at a new user-friendly program

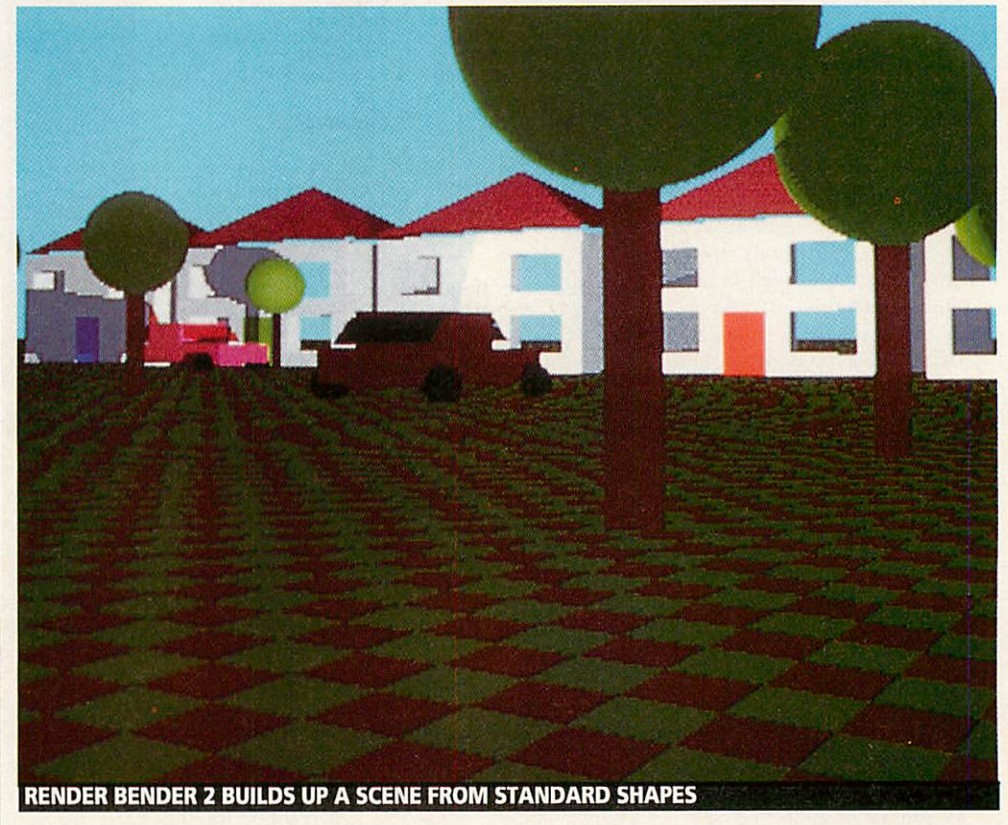
For the uninitiated, ray tracing can be a confusing and complicated subject. It involves using a computer to calculate the paths of light sources in a stored scene. Scenes are made up by joining together a number of objects, such as spheres, tubes and cubes, to form more complex objects – rather like building things from Lego.

Depending on the complexity of the ray tracing program, objects can be made to resemble different surfaces such as glass, mirrors or matt, and the results obtained with a powerful computer can be quite breathtaking. The recent *Terminator II* film is a fine example of state-of-the-art computer graphics and shows just what can be achieved by ray tracing.

The first commercial ray tracing package for the Archimedes was Clares' *Render Bender*. The program capitalised on the fact that the Archimedes is ideal for ray tracing with high-resolution colour graphics for displaying realistic images and a fast processor that can calculate pictures in a relatively short time, at least when compared to other home computers.

(For those who want to delve deeper, the original review of *Ray Bender* can be found in the July issue of *BBC Acorn User* and a technical explanation of ray tracing is found in the May 1989 issue)

But although the original *Render Bender* gave excellent results, it fell down severely when it came to user-friendliness. In order to create a scene, a 'program' had to be written to describe each object and its position. To produce a recognisable perspective, a lot of time was spent juggling numbers on a calculator to make sure that everything was correctly positioned.



RENDER BENDER 2 BUILDS UP A SCENE FROM STANDARD SHAPES

Added to that, one was never quite sure how things would look, once the ray tracing had taken place, even after an hour or so of nail biting. The old saying, 'a picture is worth a thousand words' had never been so true.

RENDER BENDER 2

Render Bender 2 was born as a direct result of the above limitations. What was needed was the ability to actually draw scenes as shapes in an editor, and view them as a perspective projection, in a similar way to the final scene. *Render Bender 2* does exactly that.

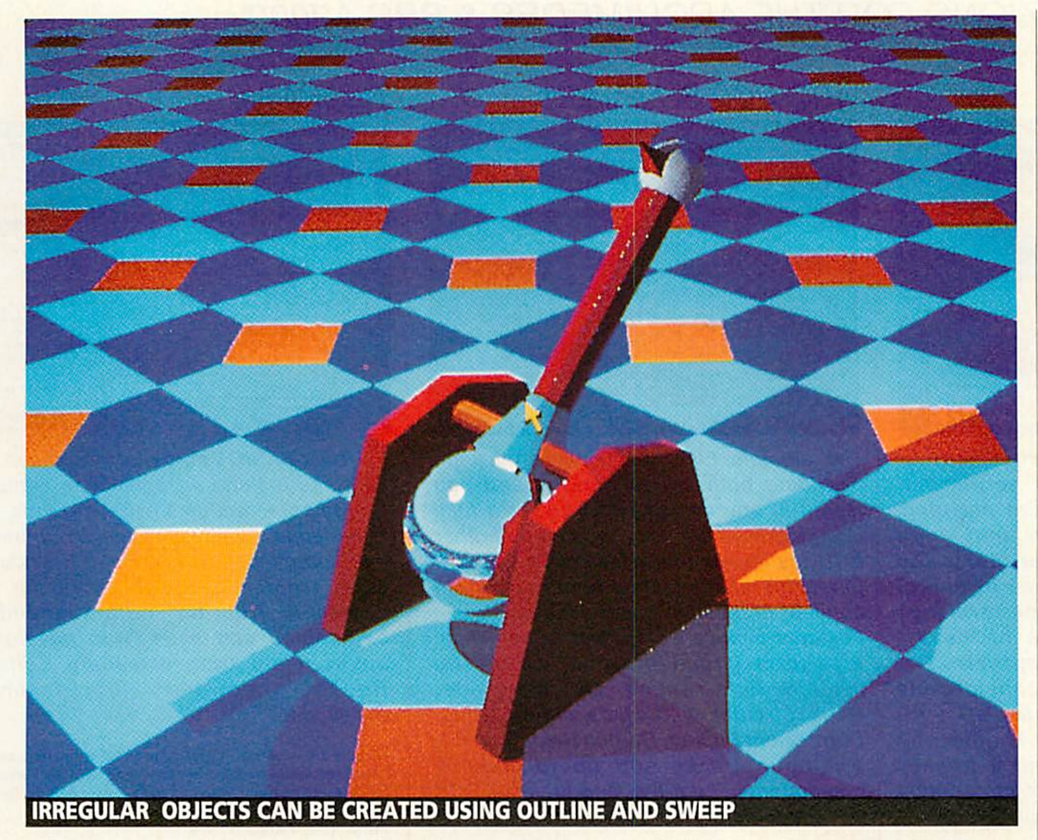
Like the original version of *Render Bender*, there are three distinct parts to *Render Bender 2*. The script language editor has been replaced with a Wimp, mouse-driven 3D editor. The new front end, called Illuminator, allows you to position any number of prebuilt objects in a three dimensional environment.

The size of an object is governed by a bounding box, which can be dragged to the correct size using the mouse. Once positioned, an object can be rotated, moved or scaled on any of the three axis. Different windows are used to show front, back and side elevations plus plan views from above and below the scene.

Two types of view are available – solid or wire-frame. The advantage of wire-frame representation is that it takes less time to display. Wire-frame pictures can, however, make a scene look very confusing, especially when there are a number of objects in front of each other. In this case, solid representation helps to provide a more coherent display.

As well as the primitives found in the original *Render Bender* program, (spheres, cuboids, pyramids, ellipses, cones and cylinders), *Render Bender 2* gives you two new ways to create objects – Outline and Sweep.

Outline provides a neat method of generating irregular objects. Once the position and size have been fixed, a small


IRREGULAR OBJECTS CAN BE CREATED USING OUTLINE AND SWEEP

grid appears that allows you to design your shape by dragging 'rubber-band' lines around it.

The resulting object can best be compared to one obtained by cutting a shape out of a piece of board. A width parameter gives control over the thickness of the created object. In the original *Render Bender*, creating anything bar the simplest 'alternative' object was nigh on impossible, so this new tool is an excellent addition to the program.

Perhaps even more useful than the Outline tool, is Sweep. This allows objects to be created by defining one side in half-profile, which is then rotated around a vertical axis, to create a solid object.

Any objects that has a symmetrical side profile can be designed in this way. Goblets are an ideal subject, as are vases and bottles, so you are sure to see lots of 'still life' pictures, demonstrating *Render Bender 2* in the future.

Another new feature that cuts out a lot of hard work is Text. Like any object in *Render Bender 2*, text has to be constructed from the primitives available. Imagine trying to put together all the shapes required for one letter, let alone a whole sentence. With the Text tool, a boundary box is used to mark the size and position of the text, and then you can type in the text itself. *Render Bender 2* then looks up all the shapes required for each letter from a pre-designed group and forms the sentence.

Three fonts (or letter styles) are allowed. Letters can be made up of rectangular tubes, touching spheres, or interlocking spheres. One omission is that there is no provision for using standard outline fonts but since these require the ability to interpret bezier curves, outline fonts could have made the process unnecessarily slow.

LIGHTS AND VIEWS

In addition to objects, up to four light sources can be placed within a scene. Pointlights act like ordinary light bulbs and radiate light in all directions, whereas beamlights allow light to be pointed in any direction.

Two markers, the light source itself and the target to which the light will shine, can be placed anywhere in the scene. Light can cross objects diagonally, appear from objects (good for headlights on cars) and it is even possible to place light sources inside objects made from coloured glass – giving coloured light.

Spotlights are very similar to Beamlights except one can control the width of the beam with an adjustable aperture.

One object that is always present in any scene is the viewpoint. Like Beamlights and Spotlights, the viewpoint has two components; the position of the eyes, and a target marking the direction of the view. By moving the two components individually, scenes can be viewed from any direction you wish.

Once a scene has been built-up using Illuminator, a special View window gives a perspective view of the scene, allowing you to see how it should look in the finished picture. At this stage it is possible to edit any of the placed objects.

If, for example, you wished to rotate a box, moving it to its new position is a case of selecting which axis you wish to rotate around and then dragging the selected object with the mouse. Although this method is quick, there is a disadvantage. Using the mouse can be rather inaccurate.

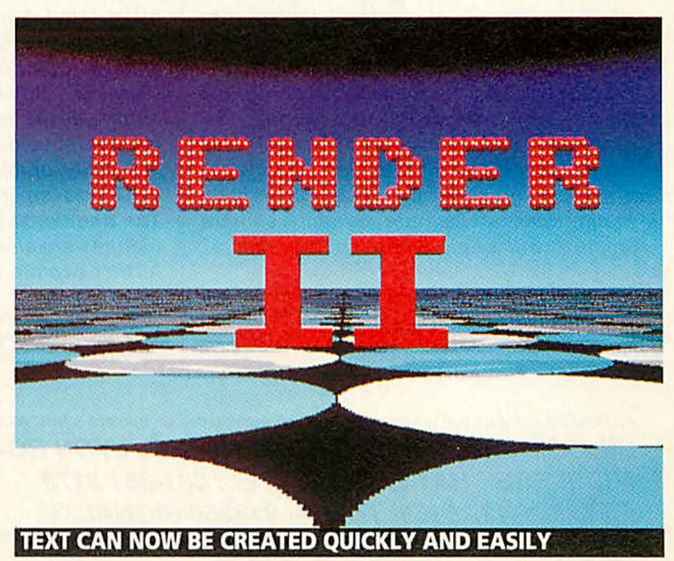
An alternative method is to select the object to be rotated and type in the axis and exact angle you wish to rotate by. Scaling and moving of objects can be achieved by typing in the relevant information in a similar way.

Like *Draw*, Illuminator allows a number of single objects to be grouped into one 'macro' object. These macros are then treated as single objects and can be scaled, rotated or copied.

ANIMATION

As with the original *Render Bender*, the new version of the program allows a number of scenes to be built up into an animated scene. Producing a moving object in a scene is simply a case of giving Illuminator the start and end positions of the object and the number of frames you require. It will then use this information to generate all of the in-between frames.

As well as moving objects in straight lines, curved paths can be defined by entering formulas that control the X,Y and Z positions and angles of rotation. For instance, if you



TEXT CAN NOW BE CREATED QUICKLY AND EASILY

SILICON VISION

DESKTOP SOLUTIONS FOR THE ARCHIMEDES & BBC A3000

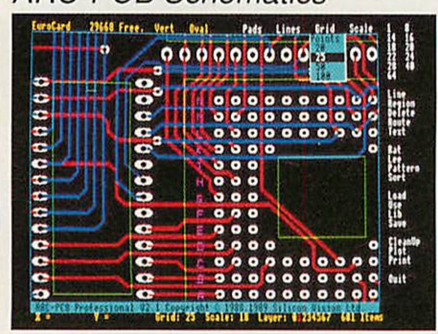
SolidTOOLS



The first fully integrated environment for 3D CAD, Photo-realistic rendering, Interactive animation, Texture mapping, Programmable animation and high resolution hardcopy to printers and plotters taking designers to new heights of design productivity and performance exceeding the capabilities of 'heavy-weight' packages on PC-compatibles and workstations which cost considerably more. The software provides 3D CAD facilities for Architectural, Engineering and Interior design offering a turnkey solution satisfying all your conceptual design and presentation requirements.

"Puts Silicon Vision at the top of the CAD market"
- A&B Computing November 1990.

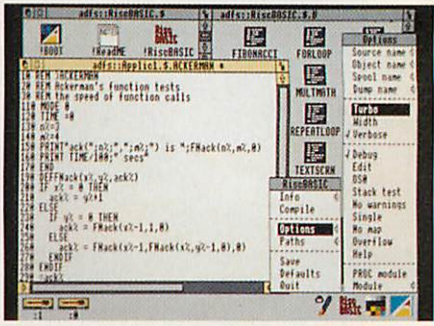
ARC-PCB Schematics



The ultimate Electronic design package providing both circuit drawing and pcb layout in one design interface for a fully integrated system that surpasses all other PCB design systems in features & speed of operation for the fastest turnaround from concept to finished board design.
Features include Component schematics, Free-form circuit drawing, Automatic routing, Rats-nesting, Multiple-layers, Oval, Circular & Surface mount Pads, Component Pulling, On-line Help, Digital & Analogue tracks and up to 300,000 components. Take the lead for your PCB designs before your competitors do.

"Performs up to professional standards. Most comprehensive available on any micro"
- BBC Acorn User February 1989.

RiscBASIC



The best BASIC V compiler money can buy. Features include an optimising compiler, relocatable modules with multiple star commands, Window-based or command line compilation environment, standalone code generation, in-line assembler with powerful floating point mnemonic extensions and a Desktop developers environment from a leading Software House renowned for technical excellence.

"If you are looking for THE compiler to go for, and are confused about which one deserves to win the very public battle that has been raging in the advertisements, well my preference is for RiscBASIC"
- RISC USER August 1989.

"very useful indeed for development work...produced significantly more efficient code" - Micro User July 1989.

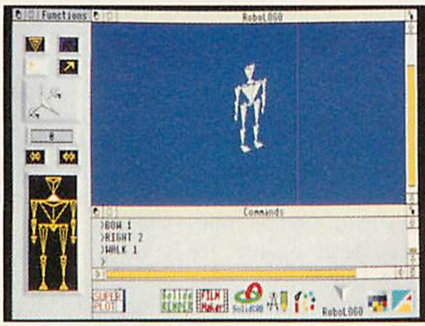
SolidsRENDER



The most advanced Ray Tracing package for the Archimedes producing photo-realistic images of designs taking into account multiple colour light sources, reflections, shadows, transparencies, refractions and textures for the highest quality pictures from the leading 3D graphics experts renowned for technical excellence. The high-speed ray tracer provides anti-aliasing for smooth edges, motion blur effects, and variable camera lens for wide angle and telephoto effects.

"SolidsRENDER offers the most comprehensive and advanced object properties ... the fastest ray-tracer ... outputting the highest quality images"
- A&B Computing November 1990.

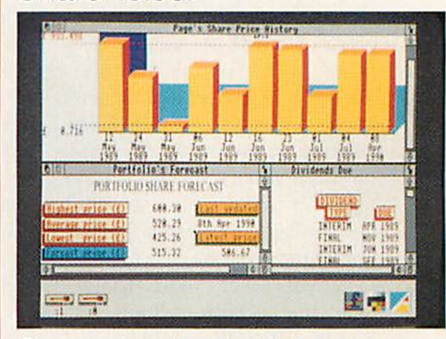
RoboLOGO



This new extension to traditional LOGO, provides three dimensional control of an articulated humanoid or animal figure based on the standard LOGO language. Natural commands such as 'Walking', 'Turning', 'Bowing', and 'Picking', etc are automatically represented graphically by natural movements of the 3D figure which is readily understood by students using LOGO as an introduction to computing. The traditional Turtlegraphics & 3D Glider features are also supported for students to further explore their school work.

"Takes turtlegraphics and LOGO programming into a new dimension. The things that the robot can do are only limited by imagination!" - Educational Computing April 1991.

ShareHolder



The complete share holder's management system providing all the facilities needed to automate your portfolio. Features include Company statistics, Share holdings, Transaction processing, Portfolio history, Forecasts, Dividends due, Share price updates plus built-in Calendar, Calculator and Hardcopy facilities for total integration.

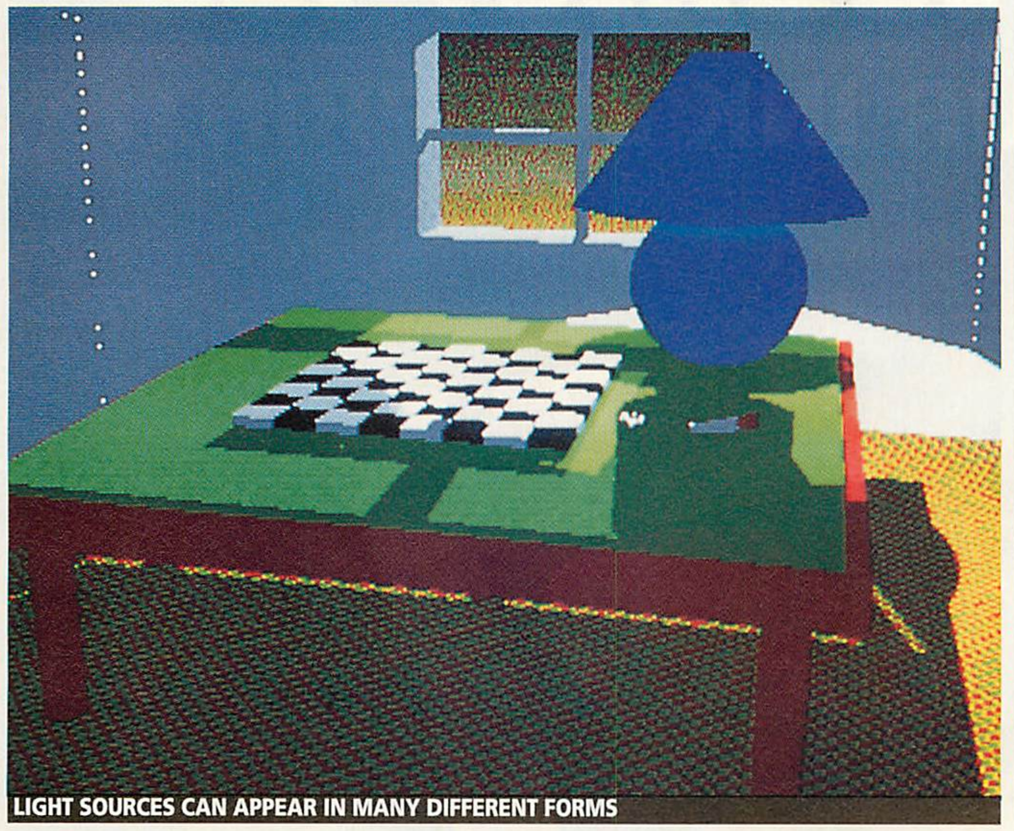
"An excellent concept, the first professional share related package for the archimedes ... well thought through ... remarkably comprehensive."
- Archimedes World March 1991.

All RISC OS software run in native mode on all Archimedes Computers & BBC A3000 with 1 Mbytes.

SILICON VISION LTD, SIGNAL HOUSE, LYON ROAD, HARROW MIDDLESEX HA1 2AG, UK. TEL: 081-861 2173 FAX: 081-427 5169. TELEX: 918266 SIGNAL G.

Product Catalogue

For more details on these and other software products in our range please enquire for a free copy of Silicon Vision's 'Desktop Solutions' product catalogue.


LIGHT SOURCES CAN APPEAR IN MANY DIFFERENT FORMS

wished to make an object bounce in a scene, entering Yposition:SINRAD(FRAME *36)*150 would cause the object to follow the Y position of a sine wave. It is also possible to move any defined lights and viewpoints. By moving the position of the viewpoint, all sorts of clever effects can be achieved, such as panning and zooming.

Before attempting to create an animation sequence, a special preview window can be called up that shows all of the frames super-imposed on one another.

RAY TRACING

When you've finished a scene and are happy with the position of all the objects, the actual business of ray tracing can start. You can load up the Render Bender application alongside Illuminator.

Both programs should run together on the desktop in a 1Mb machine, (although you can run into memory problems if you want to use high-resolution modes). You can then drag a scene file across from one application to the other or save a file to disc for ray tracing later.

Two types of file can be saved out from Illuminator. Illuminator files contain all information about a scene, including details of any animation or grouped objects. Scene files contain all the necessary information for ray-tracing, and this means that they can be transferred over to the Render Bender application directly.

Users of the original *Render Bender* will be glad to know they can load their original scene files directly into Illuminator and convert them into the new type of file.

The ray tracing part of *Render Bender 2* is almost identical in use to that of the original *Render Bender*, except for the fact that it now runs under Risc OS on the desktop. Once loaded, clicking on the Render Bender application brings up a list of parameters that effect the output of the ray tracing, in an identical arrangement to that of the original program.

People who have used the original *Render Bender* will be immediately at home with Lamp Averages and Opaque Refractive Indices. All parameters can be changed by typing them in at the keyboard or by selecting them from a menu using the mouse.

Because *Render Bender* now runs from the desktop, it is effectively mode-independent and will now allow scenes to be ray traced into any 256 colour mode. The multi-sync mode 21 gives excellent results (for instance, colour dithering actually works properly). However, it takes double the time for a mode 15 screen because this uses double the resolution.

No direct support is given for the Serial Port's PCATS colour card, although the manual does state that any 256 colour Risc OS mode can be used for ray tracing.

The other advantage of having the Render Bender application running from the desktop is that ray tracing can take place in the 'background' while other Risc OS programs are being used. It does however take a lot longer to produce pictures this way. Render Bender can be made to run in isolation giving much faster results.

ANIMATOR

The final program in the *Render Bender 2* suite is Animator. This is effectively a desktop version of the Delta Animator, part of the original package. Animator works in exactly the same way as its predecessor, requiring a list of the frames to be animated.

In simple terms, Animator works by comparing each successive frame in an animation sequence, extracting any data that changes from one frame to the next. By storing a copy of the first frame, plus all of the subsequent changes, the size of animation sequences can be drastically reduced.

As well as Render Bender pictures, Animator can process a number of files from other packages, including ProArtisan screens, sprites and files from Clares' forthcoming Illusionist program.

CONCLUSION

Render Bender 2 is a definite improvement on the older version. It still produces impressive graphics (and can understand scenes created with the original *Render Bender*). In addition there are a number of changes that make it far easier to use than the original.

Designing scenes is much easier using the 3D editor and the addition of the preview mode removes the uncertainty that was so often experienced when using the old program. Two new tools, Outline and Sweep, allow you to create unusual shapes in a straightforward way. Writing text into the program is also a far simpler process than before.

Other ray tracing programs do exist for the Archimedes, but none, to date, are as easy to use as *Render Bender 2*. Although it is limited in the selection of primitives, and lacking in special effects such as texture mapping, it offers plenty for the enthusiast.

Anyone familiar with Risc OS programs (especially *Draw*) should be able to get up and running immediately and create films within a couple of hours.

At £135 *Render Bender 2* is on a par with similar packages and remains the best ray tracing option around.

PRODUCT DETAILS

- Product: Render Bender
- Suppliers: Clares Micros, 98 Middlewich Road, Rudheath, Northwich, Cheshire CW9 7DA. Tel: (0606) 48511
- Price: £116.33 (An upgrade from Render Bender to Render Bender 2 costs £79.95)
- Description: A user-freindly ray tracing program to create graphics and animation
- Machines: Archimedes and A3000

COLOURJET 132

COLOUR INK JET PRINTER

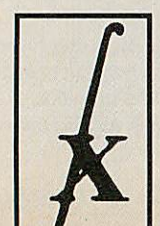
Compatible with:–
- IBM pc
- Archimedes
- Nimbus
- BBC Micro
- Amiga
- Apple Mac
- (serial version)

LOW COST
LIST PRICE
from £636 + VAT

Low Operating Cost

Windows 3 Driver Available

EMULATES OTHER COLOUR PRINTERS EG. IBM 3852, Canon PJ1080A, Quadjet
PRINTS OVERHEAD TRANSPARENCIES



EDUCATIONAL DISCOUNTS AVALIABLE

INTEGREX LTD., CHURCH GRESLEY, SWADLINCOTE
DERBYS DE11 9PT
Tel (0283) 551551
Fax (0283) 550325
T/x 341727 INTEGX

DESKTOP OFFICE

THE INTEGRATED SUITE FOR ARCHIMEDES



communications



DATABASE
WORD - PROCESSOR
SPREADSHEET
GRAPHS & CHARTS
COMMUNICATIONS

£129-95 Incl. VAT



At last - a fully integrated suite of database, word - processor, spreadsheet, charts and communications for the Archimedes. The database is simple to set up with a flexible card layout enabling you to design cards to suit your data. Video style controls make it easy to browse through the records. With instant search on fields, sort routines and reports available, DTOBase gives flexibility whilst remaining simple to use.

The word - processor, DTOWord is ideal for all types of correspondence, with the ability to change text to bold or condensed, indent, centre, justify etc. DTOWord makes every document look professional. Text can be any colour and even displayed in large characters on screen making this package ideal for young children or those with poor sight.

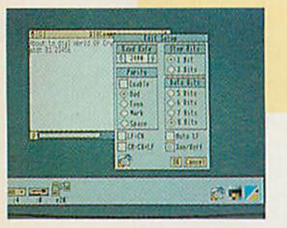
word - processor

SPREADSHEET

DTOSheet is fast and powerful but designed for ease of use. Columns can be held for reference and cells locked to prevent accidental deletion. With colours available to highlight negatives or formulae DTOSheet gives all the features you would expect of a high class spreadsheet. Data can be exported directly into DTOChart allowing pie charts, 3D bar charts, etc to be produced in seconds. Sections of pie charts can be highlighted and the colours changed to your requirements.

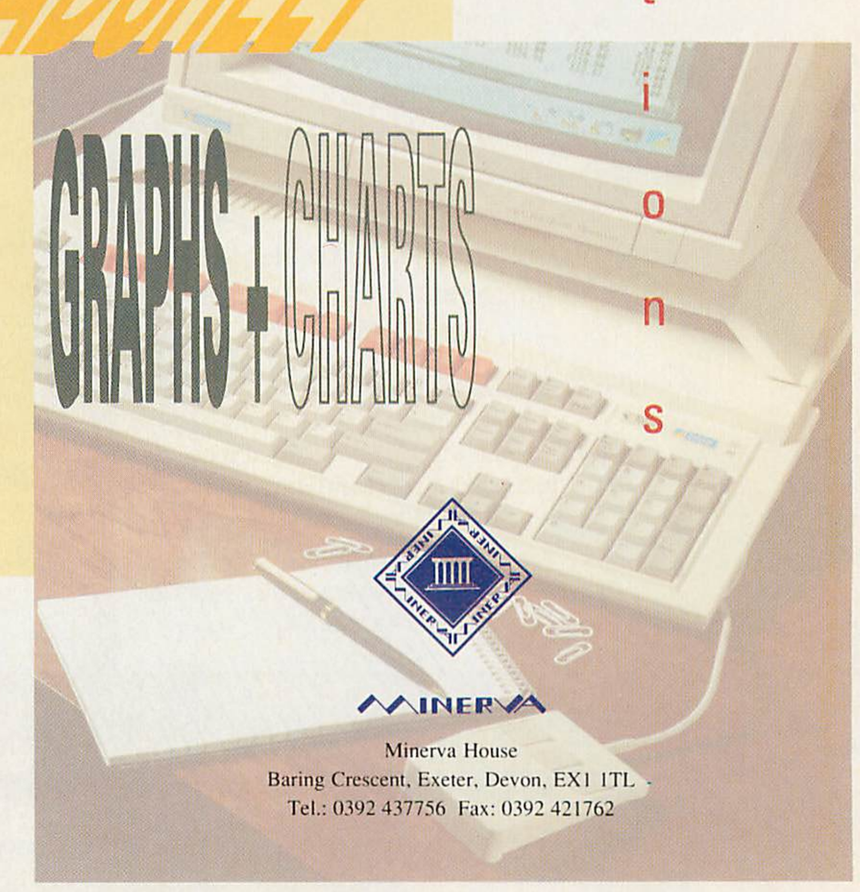


The final package in the suite is the communications program DTOComms. Multi - tasking, even on line, DTOComms supports ANSI and TV1925 emulations and is configurable for all baud rates and protocols. Text files can easily be transmitted and received.



DeskTop Office is a fully integrated, multi - tasking suite of programs for the Archimedes and A3000. Data can be transferred between the programs giving the ultimate in flexibility to produce graphs from your spreadsheet data or similar applications.

DeskTop Office is all you need for Education, Small Business or Home use.



MINERVA
Minerva House
Baring Crescent, Exeter, Devon, EX1 1TL
Tel.: 0392 437756 Fax: 0392 421762

EAS!WORD

word - processor

Easiword is simplicity in itself and ideal for everyday word-processing needs. Easiword has all the facilities of DTOWORD together with the extra facility of multiple documents.

£39-95 Incl. VAT

CHRISTMAS CRACKER

DAVE FUTCHER takes a look at a festive supplement to ESM's Desktop Folio package



THIS ADVENT CALENDAR COMES AS PART OF THE PACKAGE


WINDOWS FILLED WITH SEASONAL PICTURES

Every Christmas thousands of greeting cards and New Year calendars appear in the shops, and they seem to get more expensive with each passing year. The good news is that, if you have an Archimedes or an A3000, you don't have to buy these mass-produced cards – instead you can produce your own using a desktop publishing system.

To help you with your festive publishing, ESM, the publisher of *Desktop Folio*, has produced a *Christmas Pack*, full of stationery, clip art and other resources. It could be useful for schools, home users, clubs and churches and is the first in a series of four *DTF Theme Packs* due out before the BETT show in January 1992.

The pack consists of two special *DTF* work discs containing stationery and a library disc full of compressed graphics. There is also a comprehensive handbook included, to help you get the most from the material provided.

The pack can be used for a host of publishing tasks, not just for cards. Teachers can make worksheets, while children can make Christmas custom booklets or write stories complete with illustrations. Churches can have impressive carol sheets for their nativity service and it is even possible to design menus to accompany a Christmas lunch. But one of the biggest advantages is in being able to produce your own cards and calendars, to personalise your seasonal greetings.

GREETINGS

The *Desktop Folio Christmas Pack* allows you to produce specially designed stationery, including novelty cards and the more traditional styles.

There are a couple of layouts for the normal two-page A6 portrait-style cards. The front page has an empty



January	1992				
Sunday		5	12	19	26
Monday		6	13	20	27
Tuesday		7	14	21	28
Wednesday	1	8	15	22	29
Thursday	2	9	16	23	30
Friday	3	10	17	24	31
Saturday	4	11	18	25	

A CONVENTIONAL CALENDAR IS ALSO INCLUDED

graphics frame which is linked to specific directories, full of suitable art work. The inside page has frames set-up for the verse to be added and it is worth using a script style, such as *Freehand* or *Finescript*, from 4Mation or EFF. Landscape cards and A5 cards are also catered for.

The Christmas card section of the pack also covers 'origami-style', so you can make cracker, concertina and pop-up cards. As well as providing the basic design and suitable graphics, all of the mechanics are covered.

To put the final touch to your cards, the pack provides the resources for making personalised envelopes and greetings stickers.

MAKING CALENDARS

Calendars go hand in hand with the festive season, and the pack provides material for making several types of calendars. Some suggested cover designs are provided and the word 'calendar' and the years '1992 to 1995' are available as artwork in a number of decorative fonts. This is very useful for users without an extensive font collection.

Three basic framework designs are provided for the actual calendar pages – children can easily vary these by using different graphics and fonts. Once the basic design has been created for January, the frames containing the days are made permanent. Then the page is copied for the remaining months and, finally, the month and position of the dates are entered.

A school may wish to publish its own personalised calendar, with school holidays and training days marked – a helpful memory-jogger for many parents. With the resources provided by the pack, enterprising schools or PTAs may even wish to sell or give away professional looking school calendars, which can include advertising. Such calendars can be developed with minimum effort and cost to the school itself.

Advent calendars can also be produced with the pack. This involves designing two pages, which can then be glued together. Page one has the main illustration for the calendar and all the windows that the advent calendar uses are spaced around it. Once printed, the windows have to be carefully cut and folded so that they can be opened when the correct day arrives. Page two is a copy of page one, but with the main illustration deleted and the windows remaining. This ensures that the windows on page one and two will line up correctly. Small pictures can then be dropped into the spaces on page two.

Two basic designs are provided. They are both based on an A4 page but one of the designs is cut to the shape of a pear tree, which comes complete with partridge.

The graphics areas that make up the windows on the second page have been designated linked frames. This means that you can select any of the pictures in the Xmaspics directory, provided on the disc. If you don't enjoy drawing, this catalogue of pictures can be used. However, you can also use your own graphics in the calendar. This is true of all the basic designs.

One thing is certain, the *Desktop Folio Christmas Pack* proves that *Desktop Folio* is a powerful publishing package, that can also be fun to use. The resources provided are tried and tested and both children and adults can use them easily and effectively.



Whether it is that special letter to Father Christmas with a decorative border of holly, or the programme for the school nativity play, the *DTF Christmas Pack* will help you design and make it with ease. It is suitable for all types of users, and it could make designing for Christmas a whole new Advent–ure.

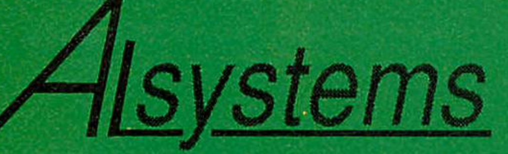
PRODUCT DETAILS

- **Product:** The Desktop Folio Christmas Pack
- **Supplier:** ESM, Duke Street Wisbech, Cambridgeshire PE13 2AE
- **Price:** £35.00
- **Machines:** Archimedes, A3000

OTHER OPTIONS

Desktop publishing (DTP) is easy on the A3000 and the Archimedes and there are many additional tools available to assist in your Christmas publishing tasks. As well as a growing range of serif and sans serif fonts there are now a number of decorative fonts, which include some festive styles. These include: Snowball supplied with *Poster* from 4Mation Educational Resources; *Drift*, which is supplied with twelve other fonts in the *Archimedes Pendown Font Pack* and *Xmas* from the Electric Font Foundry.

There is also quite a lot of public domain (PD) Christmas clip art available, including candles, holly, bells, reindeer, snowmen, Santas and Christmas trees. A more extensive collection is available from Primary Education Services, which produces two discs of *Christmas Draw* files. NorthWest SEMERC also has Draw and Paint files, produced initially for use with its *Phases #2* wordprocessor and *Genesis* and *Magpie*.

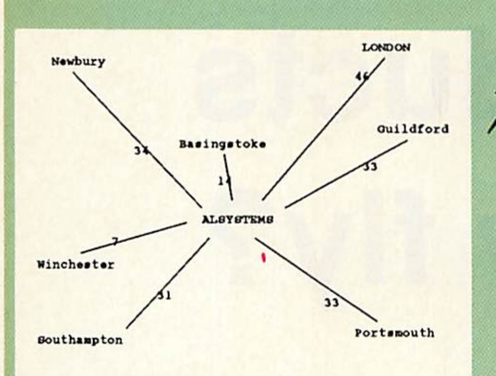


Telephone ALTON (0420) 561111

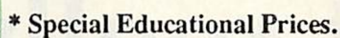


IBM
AUTHORISED DEALER

Acorn
The choice of experience
APPROVED DEALER



FREE SOFTWARE with every ACORN computer sold this month! Worth £60!!

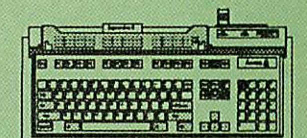


* Special Educational Prices.
* ACORN Repair Centre.
* Network Installations.
* Unix System House.



47 Winchester Road
Four Marks, Alton, Hants
Telephone 0420 - 561111

Wide Range of Software Including Educational Is Available



CadMust is a multi-tasking CAD System for the design of electronic circuits, operating in the RISC OS environment.

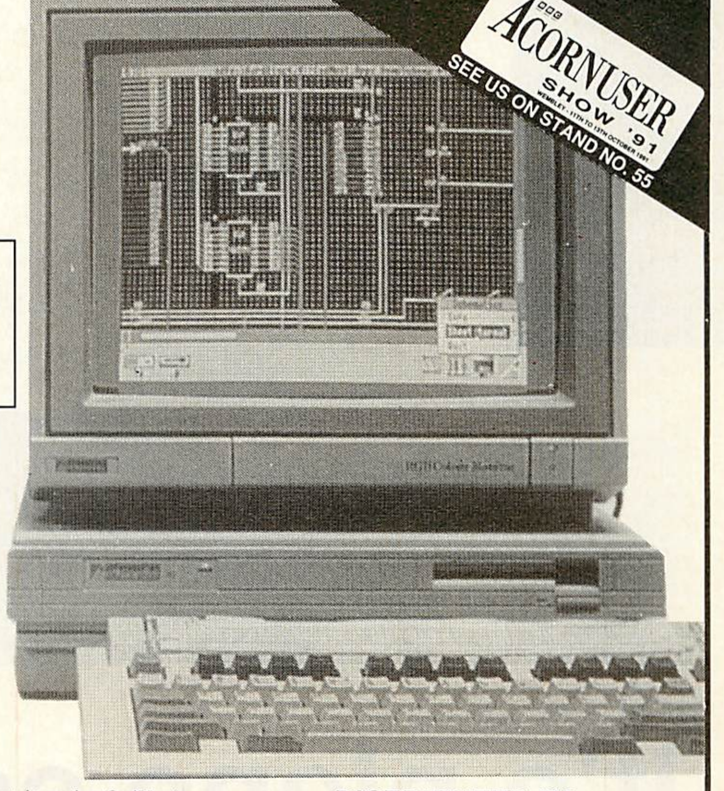
The package comprises two programs — PCB and Schematic, both of which serve a wide range of output devices — from simple dot matrix printers to Gerber photoplotters.

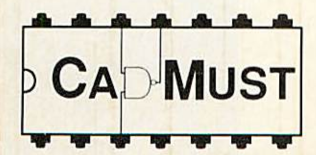
Computer Aided Design for Electronic Circuits

Optimizing and autorouting tools — for ideal component placement and multi-layer design — are also included in the package.

Because of its low price but powerful performance, CadMust is suitable for production companies whatever the size and educational requirements.

CadMust programs run on all Archimedes systems (with RISC OS and a minimum of 1MB), the A3000 and Acorn Unix systems.





PUBLISHED BY
USARC
NETHERLANDS

A total turn-key CadMust solution can be obtained from the Sole Distributor:
Lindis UK Wood Farm
Linstead Magna Halesworth
Suffolk IP19 0DU
Tel: +44 (0) 98685 476
Fax: +44 (0) 98685 460

DISTRIBUTED BY
LINDIS UK
A DIVISION OF LINDIS INTERNATIONAL LTD

The new Acorn PC Emulator software can share the desktop with native Archimedes applications. **SIMON WILLIAMS** trys it out

PC OF CAKE

Acorn's decision to emulate the IBM PC on the Arc originally worried users. It soon became apparent, though, that the emulator provided an stable and compatible PC clone inexpensively and at tolerable speed.

Even so, the emulator had a number of shortcomings – it took over the whole Arc and needed a reset to switch from the emulation back to the 'native' mode. The emulator's CGA graphics also restricted the use of many PC applications. These are the limitations that the new *Emulator* aimed to overcome.

An Arm2-based machine with 1Mb of Ram and a medium-resolution monitor is the minimum configuration that you can run a PC emulator on. The old emulator is supplied in Acorn's package as *PCEmS* so, if you have a 1Mb configuration, there is little point in upgrading to the new version as there will be no memory left over for.



PC PROGRAMS CAN NOW BE RUN FROM THE RISC OS ENVIRONMENT

However, if you add a megabyte, giving a 2Mb machine, the new emulator provides the distinct advantage of multitasking with Risc OS. You can run the emulator in a separate window and facilities are incorporated to copy the PC screen as a sprite file, or to strip all the text from it into a normal *Edit* file.

With a medium-resolution Acorn or Philips monitor, you cannot display a full EGA screen and have to scroll up and down the window to see all parts of the screen which ca be annoying.

Once you upgrade to a full 4Mb of memory, replace the Arm2 with an Arm3 and add a multiscan monitor, you have a set-up that is a good deal more useable. With a multiscan and the VIDC enhancer, you can use a more expansive mode, like 101, to view most of the PC screen alongside an Archimedes window. The Arm3 gives the emulator a fair turn of speed, though the test results show that the applications still run only slightly faster than on a 4.77MHz XT.

The emulator can take up nearly half of the 4Mb of memory on a fully-configured Archimedes. When we used it alongside a copy of *Impression* with a single frame open, there were memory difficulties when importing a full screen sprite. But, despite these problems, the new emulator is a step forward. Now you can work with PC programs alongside native Archimedes ones, transfer data and screen dumps easily between them and run a good variety of PC applications at a reasonable screen resolution. You do, however, need a multiscan or VGA monitor to view a true EGA screen, and more than 2Mb to run anything useful alongside a PC application.

Even then, you can not easily use Archimedes memory as PC memory above 640K. For a workable turn of speed, an Arm 3 upgrade is also needed. If you have such a system, the new emulator gives good PC compatibility in or out of a Risc OS window.

PERFORMANCE

We tried running a suite of application tests on three different Archimedes configurations and on two true PCs. These three application tests – which simulate the kind of work that your machine might do when running a spreadsheet, a database or a wordprocessor respectively – show that the Arm 3 boosts the PC Emulator by roughly 100 per cent .

	PCEmS ARM 2	PCEm ARM 2	PCEm ARM 3	8086XT 4.77MHz	80386AT 25MHz
Calculate	29:03	30:00	15:14	12:45	1:15
File	6:18	6:27	3:48	9:07	1:52
Manipulate	18:07	17:07	8:20	9:19	0:54

PRODUCT DETAILS

- **Product:** Acorn PC Emulator
- **Suppliers:** Acorn dealers
- **Price:** £116.33
- **Machine:** Archimedes, A3000

MORLEY E·L·E·C·T·R·O·N·I·C·S · L·T·D



SPECIAL OFFER

0% Finance available.
We will try to match or better any advertised offer.

A3000	£599
410/1	£1099
420/1	£1299
440/1	£1699
540/1	£2995
The Learning Curve	£699
Arc. Learning Curve	£1299
A3000 Special Access	£679

MEMORY EXPANSION

A3000 1MB Expandable	£69
A3000 1MB Non-Exp.	£59
A3000 3MB Upgrade	£179
A3000 1MB to 3MB	£140
305 1/2 MB	£69
400 Series 1MB	£50

CROSS-32 META-ASSEMBLER

Table driven macro cross-assembler supporting over 30 processors with the facility to add more.

Phone for data sheet. £175

ArcTools

Fully RISC OS compliant disc utility package. Various features including:

- Multiple file & directory manipulation (deleting, searching, setting access rights, file types etc.)
- System information (including computing index)
- File editor (both ASCII & hex)
- Disc editor (both ASCII & hex)

£19

CONTROL ON THE A3000

SPARKLE

Sparkle is a fully RISC OS compliant control package for the A3000 & Archimedes allowing full control of input, output and motor devices via most control boxes. Sparkle is a simple language which gives users full access to control boxes as well as the ability to use analogue equipment and simulate inputs & outputs in a variety of ways.
Data & frequency logging and counting & timing facilities are also provided as standard.

Sparkle	£59
Site Licence	£200

AnDi ODDULE

The AnDi Oddule is a low cost control box for the A3000 & Archimedes. There are 8 input/output connections, 4 analogue to digital inputs and 1 digital to analogue output. The box connects directly to an I²C connector (as on our Analogue & User Port interface) or can connect to a standard podule socket via an optional adaptor. The box can be controlled directly via RISC OS SWI calls or using Morley's Sparkle control software.

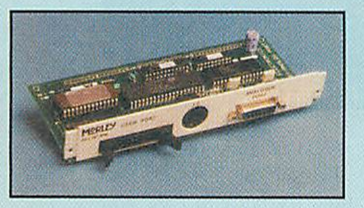
AnDi ODDULE	£49
Optional Adaptor	£8

ALFRED ROBOT ARM

The Alfred Robot Arm is designed to provide a low cost solution to the teaching of the principles of robotics in schools, colleges and industrial training departments.
The system is structured to provide on-going education by introducing expansion modules, therefore always updating the system to meet new technology demands.

The complexity of exercises that can be carried out will benefit school children who are being introduced to robot technology or technical college students requiring an in-depth understanding of industrial robots.
£330

A3000 BBC ANALOGUE & USER PORT PODULE



Full specification BBC analogue and user port. The analogue port is accessible using ADVAL from BASIC5 with all BBC OSbyte calls supported.

£59

As Supplied to Acorn for their A3000 Special Access Package

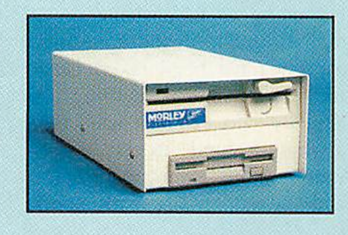
A3000 ADDITIONAL DRIVES

A3000 3.5" SECOND DRIVE



Easy to install – simply plug in and run.
High quality Japanese drive.
Incl. full fitting kit (with one drive) and instructions £125

A3000 5.25" SECOND DRIVE



Kit includes:
5.25" 40/80 track drive
Case
Power supply
Interface and leads £169

BBC / MASTER SCSI DRIVES

Completely compatible with BBC Bs, B+s and Masters fitted with ADFS. Free utility disc including Format, Verify, Archive and Park.

20MB incl. interface	£399
30MB incl. interface	£449
40MB incl. interface	£499

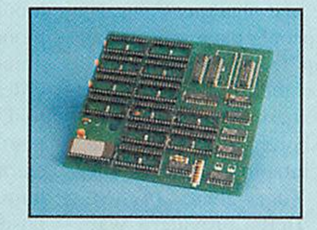
BBC / MASTER DISC DRIVES

Single 40/80 switchable	£79
Dual 40/80 switchable	£169
Power Supply	£40

TELETEXT

BBC/Master	£104
Compact	£120
RML Nimbus	£104
Archimedes	£125
Optional PSU	£9.50
Upgrade from BBC to Archimedes	£35

MASTER ROM EXPANSION BOARD



Allows an additional 8x16k and 4x32k ROMs to be installed in the Master and still leaves the cartridge slots free. £49

A3000 DISC BUFFER

Supports up to three external drives
Fully buffers all external drives
Software control of step rate and double stepping of 5.25" drives
Allows drive numbers to be changed from software £48

BBC / Master EPROM Programmer £40

As well as manufacturing quality peripherals for over six years, Morley is an Acorn Dealer & Service Centre. This advertisement only covers a small range of the products we offer. If there is anything you want that you do not see advertised please phone for a competitive quote.

All prices exclude VAT & carriage

MORLEY HOUSE, WEST CHIRTON, NORTH SHIELDS, TYNE & WEAR, NE29 7TY. TEL (091) 257 6355. FAX (091) 257 6373

SHOW TIME

With the BAU show on this month's agenda, **SAM GREENHILL** looks at some of the delights in store for games fans

It's show time at Wembley! The curtains go up for the *BBC Acorn User* show and what do we find under the spotlights? Well, since our show preview last month, very little has been announced in the games world, except from the trusty boys at The Fourth Dimension of course. They will be launching an arcade adventure game called *Pandora's Box* which, thanks to the 3D isometric view, is a bit like a cross between *Spellbinder* on the BBC micro and some of the old Ultimate games. You control a wizard, and the idea is to travel from room to room collecting, shooting and exploring.

One Man and His Dog will never be the same again when *Chopper Force*, a helicopter simulator from The Fourth Dimension, is released next March. The game is only just beginning to take shape now and, although all the hovering aspects have been taken care of, there is only one thing to actually do when you fly around – and that's shoot sheep! You hover near them and then open fire with your futuristic photon laser and they fly up in to the air, spinning around before landing in the ground with their legs stuck in the air. Truly sadistic! By next March a proper mission or two should be incorporated in the game but, for the time being, it is your destiny to stop those grass-eaters.

Although Superior Software doesn't have a stand at the show it is now possible to buy its latest Archimedes/A3000 game *Air Supremacy*. In *Supremacy* you can fly planes, drive tanks or ride boats around the landscape, doing all of the usual destructive chores, in an attempt to complete the level and better your vehicles.



OPENING PANDORA'S BOX REVEALS A HOST OF PROBLEMS

This month we've got quite a few hints and tips to give away. Martin Latter from Littlehampton in West Sussex has noticed that *Saloon Cars* from The Fourth Dimension is a very difficult game to play. Very good, but very tricky. Unlike the rest of us though, Martin decided to do something about it and, better still, has sent his solution in for the benefit of the rest of us. It's the sort of remedy that tends to solve most problems in life, so no marks for originality. The solution? Money!

You'll need to have a saved-player file to work with, so either backup an existing file or load up the game and create a new one. Once this is done enter Basic by pressing F12 in the Desktop and typing *BASIC, then type *LOAD "filename" 9000, where filename is the name (including the path name) of your saved file. Next enter ?&905E=&50 followed by ?&907A=&09 to alter the file and finally *SAVE "filename" 9000+9BF to save it back to disc.

The file is now ready to use in the game. The latter alteration is the computer's equivalent of bribery: you've just won the first nine races!

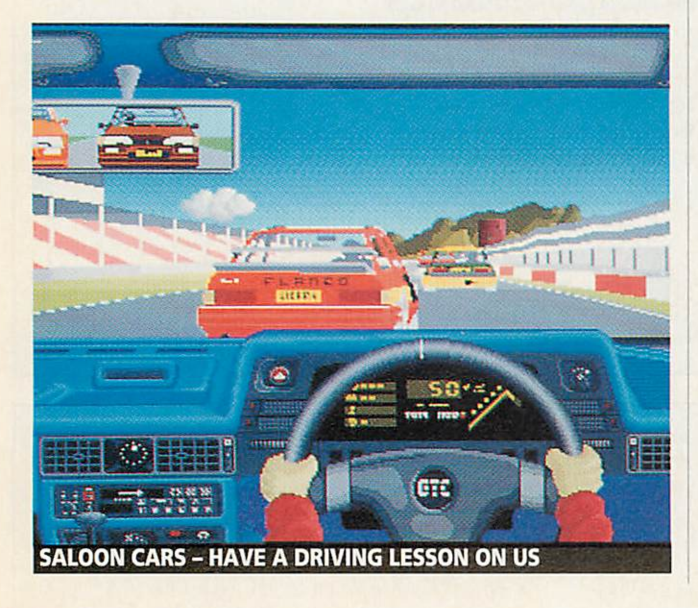
Two people have sent in the same tip for playing *MiG-29 Fulcrum*, the Soviet flight sim from Domark. Martyn Rose of Middlesborough, Cleveland and the infamous Ganesh 'The Bear' Yoganathan of St. Albans, Herts. provide a way of obtaining a high enough score to play the final mission without needing to fly the other ones first.

Play the Blue mission and fly over the sub as low as you dare then fly back to base and land safely. When you press CTRL-D the game will present you with 100 points, congratulate you and so on, and then suggest that you go on to the next mission.

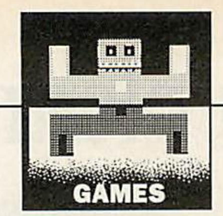
Instead, select the Blue mission again, but don't bother to take off. Just press CTRL-D to get back to mission briefing and bingo! Another 100 points are awarded just like that!

Martyn Rose also sent in some passwords, which will please those of you completely stuck on either the excellent *Ballarena* from Eterna or *Bug Hunter in Space* from Minerva. They are: punkandjump, montpellier, sea sex sun, mountaineers, vl 86 c 101, grenouille, blubedilomar, brain killer, rhythm box, bouboulоid, menfou, 32 bit power, martini, see you soon and eterna for *Ballarena*, humanoid, adamski, suggs and posdnuos for *Bug Hunter in Space*.

No doubt Martyn will be the cause of much dust flying off old copies of these games!



SALOON CARS – HAVE A DRIVING LESSON ON US



GAME SHOW

MiG-29M Super Fulcrum

Domark. Tel: 081-780 2222
Archimedes/A3000 £44.99

MiG-29 Fulcrum is the predecessor to this game and is one of the best games for the Archimedes and A3000, certainly the best jet simulator. In it you pilot a Soviet MiG-29 fighter jet around several missions and use guided missiles, rockets and a super-smooth plane to thwart the enemy. Perhaps the best thing about it is the unbelievable smoothness of the aircraft as you fly.

Super Fulcrum has lost none of these features, and has gained a few more. For example, the cockpit has changed to look very high-tech and a few new snazzy readout displays have been implemented. This is all taken from the new MiG-29M soon to be displayed at the Paris air show by the Russians, and it is interesting to note that even the Americans have admitted they would have been completely defeated by the jet if they had ever been forced to do battle against it!

Another major addition is the facility for two people to connect their machines together – and it is possible to link an Acorn machine with an Amiga, PC or ST to fight against one another. Although this starts off as fun, there is really only your opponent and four pyramids to keep you company, so this feature has a limited life.

The game has a few nice gimmicks, such as mid-air refuelling, but is essentially a new mission for an old game. The mission is to progress around a South American country taking rebel airfields one by one and slowly reducing the enemy's defences. This is great fun but also very repetitive and there is little in the way of extra graphics, seen in other flight sims.

Despite the odd improvement, we have taken a step backwards. *Super Fulcrum* contains only one, albeit very large, mission and thus lacks the welcome diversity offered by *Fulcrum*. Also, this scenario is highly reminiscent of *Interdictor 2* from Clares, which was written by the same programming team. The difference is that *Interdictor 2* is both better and cheaper.


MiG-29 SUPER FULCRUM: THE ULTIMATE SOVIET HARDWARE?

It seems likely that Domark intended this game primarily for other formats, but decided to release it for the Archimedes and A3000 as well.

While it is always good to see the Acorn market supported, the *MiG-29M Super Fulcrum* will set you back £45. This is surely an unreasonable sum to charge, when we can buy *Interdictor 2* for £10 less.

Sam Greenhill

BLASTON

Eterna Software.
Tel: (0933) 279300
Archimedes/A3000 £19.95

This innovative French software house now has 11 titles for the Archimedes either released or under development, and nearly all of them are of very high quality. More often than not, an original idea is given great graphics by resident artists as well as skilfully sampled sound but what is sometimes lacking, as here, is the gameplay. Here, buried beneath the ludicrous sci-fi background story is a better than average vertically scrolling shoot-em-up.

Your mission over four astonishingly drawn levels is to win back control of the Galaxy's uranium supply from the evil Korguls. Your character, who is viewed from above, can obtain several upgrades and weapons systems by shooting at spherical tokens to help him blast the Korguls into tiny bits. With these tokens you can buy shields, more speed, smart bombs and the like, but the twist is that the aliens are already armed to the tentacles, and you'll be lucky to survive more than five minutes unless you learn fast.


BLASTON GOES BLASTING ON

The battleground moves from a desert to a factory, then a space-grill and finally the Korguls' home turf. They menacingly zoom around you, leaving you dizzy and frustrated, since they run away as you try to retaliate. Honestly, anyone would think they didn't *want* to be blown up!

Unless your oxygen supply is replenished regularly, your head swells and explodes à la *Total Recall*. If your heart rate drops to below 10 then you know you're in trouble as well. There's plenty to stop you but if you invest in speed and weapon upgrades, you can get at least some chances to retaliate in kind.

All in all, the game is good fun, but it's not varied enough, with you simply ploughing ever-upwards to the strains of plinky music, similar to that in the game *Tactic*.

Beautifully crafted though this is, there's not enough interaction with your surroundings. This is nonetheless a good buy for those who feel at home in a deluge of enemy laser fire.

Mathew Tizard

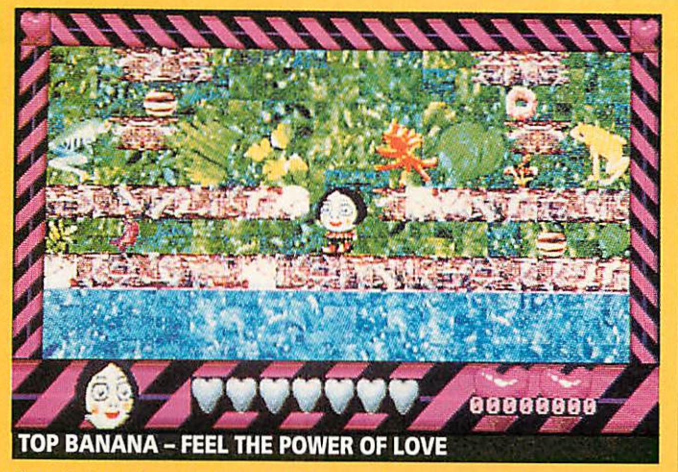
TOP BANANA

Hex. Tel: 071-701 0652
Archimedes/A3000 £25.99
(includes T-shirt)

It's not easy knowing where to begin with *Top Banana*. From the pop video intro and the dance-megamix soundtrack to the game itself, everything is weird with a capital W. *Top Banana* is basically a platform game. The scenario runs like this: 'you must use your power of Love to save the planet from impending ecological disaster and release hidden hoards of succulent riches.'

This basically translates to jumping up through different levels on a series of platforms, dodging what look like waiters, bulldozers and chainsaws. I can see the link between the bulldozers and chainsaws, but where do the waiters fit in? Must be all that paper they use taking orders...

The aggressors can be removed by throwing hearts at them. When hit, the aggressors turn into either coloured hearts, which give you special powers, or fruit or sweeties. More fruit and sweeties can be found dotted around the platforms and can be collected for bonus points.


TOP BANANA – FEEL THE POWER OF LOVE

As the game progresses, further meanies appear in the form of blobs of acid rain that drip from branches, and giant pink rabbits that fall from the sky. Both have to be avoided at all costs.

Unlike most games of this type, there is no real time limit. There is however, the small problem of the polar ice caps melting, which slowly floods the current world. Should the water reach your feet, you're in for an early bath and one step closer to death. The water can be turned off by activating a tap situated near the top of the platforms.

When you've finished three levels, it's on to the next world. Each world has a kind of theme: the first is the rain forest, the second, a 'tech-noir' background. Things get distinctly more bizarre the further you progress, with the final world culminating in The Mid Scape – a psychedelic orgy of day-glo patterns, coke cans and grinning faces.

Top Banana has to be one of the most playable games I've experienced on the Archimedes. Control of your character is excellent and you can even move left or right in mid jump to avoid the nasties. When the game is paused, the graphics can look quite muddled. When you're moving though, all the background and platforms move up and down in glorious parallax, giving a real sense of depth.

Motion and animation is exceptionally smooth, with full use being made of the Archimedes' 256-colour mode 13 graphics. All the graphics have in fact been grabbed with a video digitiser, making the game a graphical equivalent to a sampled house track. Sound throughout the game itself is on a par with the graphics; weird and excellent. Collecting fruit or sweeties produces a kind of 'yum' sound which comes out sounding more like a distressed sheep.

At £25.99, *Top Banana* could be seen as a bit expensive, but with the added bonus of a free T-shirt, you should get your money's worth. Buy it now and save the world!

Timothy Leary

TOWER OF BABEL

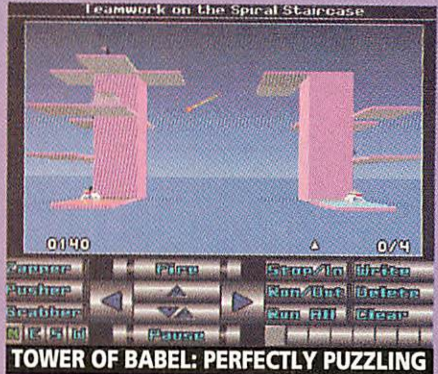
Cygnus Soft. Tel: (0533) 559711
Archimedes/A3000 £24.95

It would be really nice to be able to say that *Tower of Babel* was a totally original game. New ideas are few and far between these days and although '*Babel* has a number of innovative features, it is still basically a puzzle game rooted firmly in the *Repton* camp.

The game consists of a number of groups in each of which are nine three-dimensional 'towers' ('*Babel*-speak for screens). Each tower has an objective – either shoot a certain number of robots, collect a given quantity of klondikes – small pink ingots – or maybe a bit of both. Once this is achieved, you are allowed to progress to an adjacent tower. Completing seven towers gives you access to the next group.

On any given level you are put in control of up to three giant mechanical spiders, unaffectionately known as zapper, pusher and grabber. The tower can be viewed (in solid 3D) from the point of view of any currently active spiders. Most towers also have 'external' cameras that can be moved along the edges of the tower for inspecting it.

Selecting a spider will allow you to control it by clicking on move, turn and fire buttons at the bottom of the screen. The outcome of 'fire' depends on which spider you're driving and what you're firing at. Fairly obviously, the zapper shoots things and the pusher repels things. The grabber has a number of special functions in addition to collecting the all-important klondikes – it can control lifts and freeze movement to name but two. It is also possible to program the spiders with up to eight commands and these can be executed at any point in the game.



TOWER OF BABEL: PERFECTLY PUZZLING

All movement within the game is performed in discrete units – move forward means move one square. A tower can consist of up to four physical levels (connected by lifts) of 8×8 squares. All 3D views are orthogonal – you can only look north, south, east and west.

Sounds easy doesn't it? Well, it is, up to a point. Then the alien defences appear. There are fixed and rotating zappers and pushers that can shoot and move your spiders. Blocks, worms and watchers get in the way. Flags and hoppers can be shot. Bombs and mines explode. Reflectors and prisms cause havoc with your spider's firing. Not to mention lifts, freezers, wipers, exchangers and converters. Just about all of these are beautifully animated and the spiders' lolloping gait is perfect. Add to this the background graphics (sky, stars, moons, shooting stars) and the atmospheric sound effects and you have a well-presented game.

A lot of care and attention has gone into the front-end. All the menus and options are exceedingly easy to use. Other companies, please take note! Sideways movement keys and an Identify Alien facility would have been nice but the most important thing is that this game is fun to play.

Maybe *TOB* is not the one to go for on a continuous basis, but certainly playing a tower or three, when you get tired of your work routine, is very relaxing. And, if you do get bored with the game, you can always start tinkering with the tower designer...

David Lawrence

HELIX BASIC

- VIRTUALLY TRANSPARENT INTERFACE TO RISC OS
- FULLY RISC OS COMPLIANT
- PROVIDES CONTROL OF TEXT, GRAPHICS, SOUND & ANIMATION
- UNLIMITED LENGTH STRINGS

THE ULTIMATE RISC - OS PROGRAMMING LANGUAGE

All for only £99.95 Inc. VAT

Access & Visa Welcome

In just FOUR days time you could have FOUR MEGAbytes of RAM in your Archimedes 310

CCS 4Mb RAM Board
ONLY £329 (Inc. VAT)

Take this opprtunity to upgrade to ARM3 for £399 or SCSI hard disk drives 83Mb -
internal £469
external £550
Telephone for details of other sizes.

The price includes:

- *VAT*
- *Fitting and Testing*
- *FREE courier collection and delivery service*
- *FREE MEMC1A upgrade (while stocks last)*

The CCS 4Mb RAM board features:

- *ARM3 compatibility*
- *Low power consumption*
- *Money back guarantee*

DAY ONE
Pickup


DAY TWO
Fitting/Testing



DAY THREE
Testing/Despatch





DAY FOUR
Returned





Qualified Acorn Dealer

☆ ☆ ☆ ☆ ☆

Visit Our Computer ...... Open Day
Friday 22nd & Saturday 23rd November at
THE DERNGATE NORTHAMPTON
☆ FREE ADMISSION ☆
☆ PHONE FOR DETAILS ☆
☎ (0604) 760991

☆ ☆ ☆ ☆ ☆

Exhibitors Include
Acorn Computers
Computer Concepts
Minerva
WildVision

Special Interest Areas
For
Education &
Special Needs

20 Osyth Close . Brackmills Ind. Est. . Northampton . NN4 0DY ☎ (0604) 760991

LEMMINGS

Krisalis Software
Tel: (0709) 372290
Archimedes/A3000 £25.99

Sporty things, lemmings. You've got to hand it to them, they'll try anything: hang-gliding, swimming, fire-eating, standing under large weights, you name it. Trouble is, in each case they forget something rather vital, such as the hang glider or the water-wings, and your job is to save them. But you know this already, and if you don't know the object of *Lemmings* then read the rest of this issue of *BBC Lemming User*, sorry, *BBC Acorn User*.

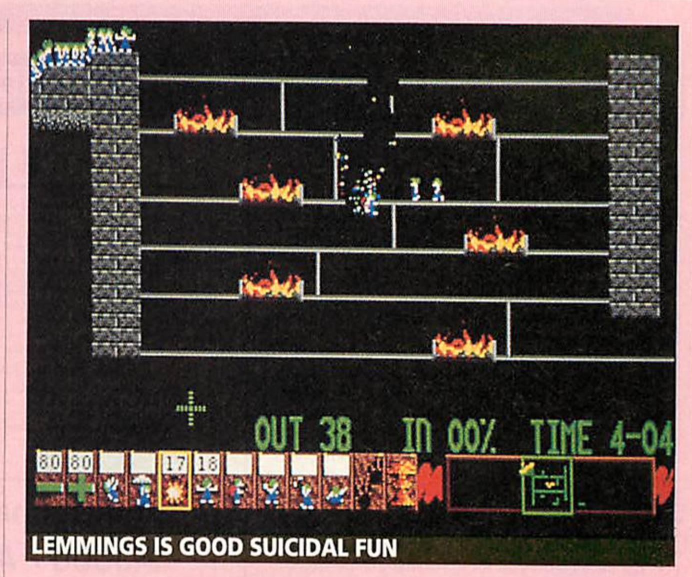
Point is: this issue is stuffed with lemmings. It's all good press and rightly so because *Lemmings* is a very fine game. But reviews are objective, so here come the negative views.

You could argue that the Acorn version deserves better graphics and sound than the other incarnations and it might have been possible to use the Acorn's enhanced speed to improve the resolution and smoothness of the game. But as it stands, it is almost identical to the Amiga version.

Being the pedant that I am, I shall point out that I found it a bit irritating when I pressed the space bar to continue, and nothing happened. It is normal Acorn practice to whack the space bar, so it would have been nice if Krisalis could have implemented a 'fail safe' routine to keep idiots like me, who can't read, happy.

The other point is that to get back to the main menu screen you can end up being forced to click Select, then double-click Select or press ESC, and then finally click Adjust on the mouse again before getting there, each time waiting for the screen to fade out and fade in.

However, I'm being very fussy. It was seriously difficult to think of anything negative to write about *Lemmings*. It's the sort of game that you either love or hate. If you enjoy it then just about everything is perfect: the graphics, the music and, of course, the animated lemmings.



LEMMINGS IS GOOD SUICIDAL FUN

The sound effects are dead funny: when you ask a lemming to self-combust it shrieks 'Oh No!' in a high pitched voice, then holds its paws over its ears quivering with fright before blowing up! This game is possibly one of the most sadistic ever.

Buy it – it is by far the best game on the Archimedes/A3000 to date. And don't forget to play the *BAU Lemmings* demo on our free disc.

Sam Greenhill

BREAK 147 & SUPERPOOL

The Fourth Dimension.
Tel: (0742) 700661
Archimedes/A3000 £24.95

When we first saw screenshots of this game being advertised by The Fourth Dimension last year, we were not impressed. The graphics looked very artificial indeed, with the table set in a bright white room and each ball sporting a black outline. To The Fourth Dimension's credit the game was not released but postponed while Gordon Key (author of *E-Type*, *Holed Out* and *Apocalypse*) revamped the game almost entirely from scratch.

The results are astonishing. *Break 147 & Superpool* has all the hallmarks of a high quality glossy game with good attention to detail and what might be described as a nice overall 'finish'. Although it is essentially one game, you can choose to play either pool or snooker and either compete against the computer or another earthling, depending on how you feel and whether you've got any friends.

Both games are very realistic. More so than previous pool 'simulators' because this is the first time to my knowledge that you actually control the cue – not a power meter or anything else. The cue on the screen mimics the movement of the mouse, so to perform a lightning break you have to shove the mouse forward a bit sharpish. Not too fast though, because if you lose control the shot is called a foul – just as on BBC2.

At first the mouse controls your 'legs', allowing you to move around the table. When you've decided what you want to pot and where you want to pot it you click once with Select and the mouse becomes the cue.

At this stage you may make minor lateral adjustments to the cue tip and even shift it vertically to introduce backspin or top-spin. Once the cue has made contact with the ball the mouse takes on another role, that of your neck. Thus you can turn your view from side to side as you watch the balls careering around the table. In my case, they usually go in all directions except towards the pockets.

One small criticism here: the mouse takes on many a role in this game and, although the direction you move it in is appropriate to the role it's playing at the time, there is a problem. As you swiftly move from walking to shooting to observing you have to keep changing the direction you move the mouse which can become quite annoying. Also, the mouse speed is set by the game, so users who enjoy a high mouse speed on the Desktop will be irritated by the sluggish behaviour of your 'feet', for example.

GET BEHIND THAT CUE BALL

Penultimately, on the negative side, it would be nice to be able to view the table from one of the camera positions immediately following a shot. As it stands, you have to try and control your 'head' to see if the shot contained any measure of success and, by the time you've worked out your elbow from your something-else, it's too late.

The only other niggle is that, according to a pool expert friend, the balls are a bit too smallI can't tell. In its favour, the game has a host of other features such as camera view points and replays of the last shot. The sound is something worth noting: the balls click and thud off each other and the cushions very convincingly, and sampled voices have been used to represent the referee.

There are probably no better snooker or pool simulators available. This game is structured well, plays well and in general flows easily and enjoyably. It is visually wonderful.

I just wonder how much in pub expenses Mr Key claimed from The Fourth Dimension, while he developed this one!

Sam Greenhill

SOFTWARE SHOWCASE

EDUCATION

ASTROLOGY

TEACH YOURSELF
with our **STARTER PACK.**
Only £12.50 - No previous knowledge required
Payment by Access/Visa, Cheque, etc
Or send sae (33p - about 9"x7") for free catalogue of our wide range of programs for
PROFESSIONAL ASTROLOGERS *(BBC, Archimedes, etc)*
Also **I CHING, GRAPHOLOGY, TAROT,** etc
PLEASE STATE COMPUTER AND DISC SIZE
ASTROCALC (Dept BACU) 67 Peascroft Road, Hemel Hempstead Herts HP3 8ER tel/fax: 0442 251809

BUSINESS

SOFTWARE **Dixon AND Dixon** SYSTEMS
Established 1981

Telephone 091 285 3042

Fax 091 285 3042

NEWSPAPER DELIVERY

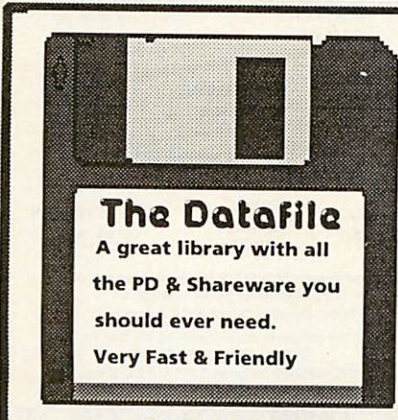
FARMING

MILK DELIVERY



35 Rokeby Drive, Kenton, Newcastle Upon Tyne, NE3 4JY

PUBLIC DOMAIN



The Datafile
A great library with all the PD & Shareware you should ever need.
Very Fast & Friendly

Cat/Demo disc III 1.7 megs of PD and a very good catalogue.



Send £1 to:
22 Duxford Drive
Aldergrove
Co.Antrim BT29 4BG

BBC PD
8-bit Public Domain Software

WISH SOMETHING NEW WAS HAPPENING FOR YOUR BBC/ELECTRON ?
SOMETHING IS !

For your catalogue and sampler disc, send £1.50 to BBC PD, 18 Carlton Close, Blackrod, BOLTON BL6 5DL stating disc size and format - or send an A5 s.a.e. for brief details and a summary catalogue. (Please make cheques payable to A. Blundell).

ARCHIMEDES PUBLIC DOMAIN

LOWEST PD = THE BEST NAME IN PD

SEND for **LOWCOST PD's** latest catalogue/demo disc. It contains full details of all our exciting £1 discs. Yes, JUST £1 a disc.

Nothing but the BEST at LOWCOST PD!

Please send a £1 coin or £1 cheque made payable to J. Michalski for our catalogue/demo disc to:

LOWCOST PS (LC PD), 6 FURZELAND HOUSE, SHEEPHOUSE WAY, NEW MALDEN, SURREY, KT3 5PH.

PUBLIC DOMAIN

Skyfall

Double Demo Disc with

65,000 Word Spell Checker.

Skyfalls Autumn Catalogue is now out, it now contains more details than ever before, of our 430 discs.

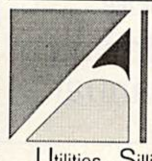
It comes complete with two Demo Discs. We also offer a support hotline, plus rapid depatch on all orders.

VISA

Access

Please send £1 to;
PO Box 2220, Birmingham, B43 5RZ.

PRIME PD



Public Domain Software for the Archimedes. Rapidly expanding collection of packed discs all at only £1 each. Categories are:

Utilities - Sillies - Games - Demos - Projector files - Animations - Ray-traced - Outline fonts - Clipart - Music - Graphics

Special help for schools choosing PD. Friendly and reliable service.

NEW DEMO DISC 2



Our Demo Disc 2 features over 1Mb of compacted PD software and our brand new, highly detailed, mouse driven cataloguing program.

Send £1 for our demo disc catalogue 2 and printed catalogue, or an SAE for our printed catalogue only.

Cheques and PO's payable to 'Ian Kershaw'.
PRIME PD (BAU3), 29 Tulworth Road, Poynton, Cheshire SK12 1BQ

BUSY BEE COMPUTERS LTD

SPECIAL OFFERS.

FREE PEN WITH SOFTWARE ORDERS OVER £15.

6 PD DISCS ONLY £5.

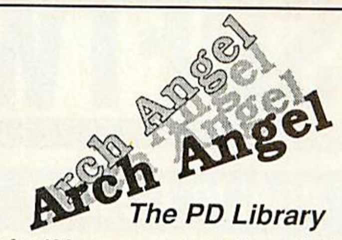
DEMO & SINGLE ARC PD DISCS £1 EACH.

SEND A5 SAE FOR PD & SUPER SOFTWARE CATALOGUE.

PO / CHEQUE TO:-

BUSY BEE COMPUTERS LTD.,
PO BOX. 25, ORMSKIRK, LANCS. L39 3QR
TEL 0695 573825.

PUBLIC DOMAIN



The PD Library

Nearly 400 cram-packed discs of the best Archimedes Public Domain Software.

Unlike other libraries you can pick 'n mix the programs you want. Just £1.10 per disc for our own compiled discs or £1.50 for the pick 'n mix service.

Tried the rest? - not impressed? - Now try the best! Here are some of the comments we've had....

Cheaper
Better Choice
Brilliant prices
Brilliant concept
Very Impressed
Unique way of ordering
Excellent service
By far the best
Joy to use
Quicker

Send a £1 coin for our catalogue/demo disc to: *Arch Angel PD, 9 Chancel Court, Pinhoe, Exeter, Devon, EX4 8QE. Cheques payable to Sean Creech.*

ARCHIE PD ONLY 95P!

Send an SAE for our free printed catalogue or you can choose from previous adverts and the mini-selection below:

GA08 - FastDemo etc. Brilliant 3D car racing game
RD10 - Armageddon Megademo Impressive demo
SS07 - News Themes BBC, ITV and SKY news themes
GR02 - Reflections Raytrace Amazing graphics disc
RT07 - Mirrors Ray traced animation on your Archie!
UT06 - Fractals Interesting mathematical programs.
RD07 - Thunderbirds Fantastic demo with the works!
AN09 - Vogue Great Madonna animation with music.
ST11 - Trackers 11 Incredible music with player.
GA03 - Command etc. Action-packed arcade games.
UT10 - Utilities 10Twenty useful programs on one disc!
AN04 - Star Trek Animated pictures for all Trekkies.
MM01- Maestro Music More than 100 Maestro tunes.
RD12 - Demos disc 12 Show off your Archie with these!
GA04 - Dungeon Quest Excellent White-Magic clone.
RT02 - Coke Can Phenomenal colour animation!
SS06 - Dr. Who Theme Music from the TV show.
RD09 - Armaxess Megademo Another great demo.
GA02 - YAIG etc. Quality arcade fun at budget prices!
ST06 - STrackers 6 More music for your Archimedes.
AN05 - Snoopy Animation Sequence from the cartoon.
AN06 - Cartoons Brilliant colour animations with music.
ST12 - STrackers 12 Unbeatable STracker music.

Each disc costs just 95p inclusive. Minimum order two discs. Make cheques/POs payable to: 'Ozone Friendly PD'.

Ozone Friendly PD,
180 Cumnor Hill,
Oxford. OX2 9PJ

ARCAYNIA

PO Box 1927 : Sutton Coldfield : B74 3QZ

Arcaynia Demo 7 Disc

crammed with compacted new software, comes with a professional 12 page printed catalogue, listing over *430 discs* of quality PD software for the Archie, including ***The Largest Ever Serious Application Section, and some software exclusive to us,*** plus lots more for every user.

All for just a £1 Coin -

We can offer discs from £1.30, but for that you don't just get a disc, you get the best and latest PD software, the trash doesn't enter our catalogue, plus our technical backup where applicable, and even more important you should receive your discs within 6 days of posting your order,

as all orders are processed within 3 days.

SOFTWARE SHOWCASE

PUBLIC DOMAIN

THE DATASTREAM

THE OFFICIAL P.D. HOUSE OF CLUB A3000

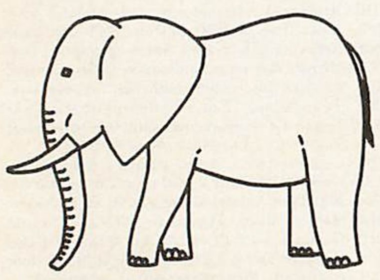
Due to the great success of our DataPack, which includes our forty page catalogue, we are now pleased to announce that we have once again reduced the price of our 450 plus Public Domain discs to an incredible 99p each, no matter how many discs you order from us.

Our very own disc-based magazine, Absolutely, has proved very popular with our customers, as it provides a cheap way to regularly receive the latest P.D. (about 2mb per disc) as well as a disc full of articles of interest to all Archimedes and A3000 users. See the DataPack for more info.

The DataPack also includes our DataStream Demo disc 3 - a wealth of Public Domain goodies and our highly acclaimed DataDemo III graphics and sound demo. To order the DataPack send £1 to the DataStream P.D, 32 Hollinwell Avenue, Wollaton, Nottingham, NG8 1JZ.

Absolutely

DON'T FORGET...



...that Acme PDSL means more software per disk, a great service and the widest range of Archimedes Public Domain available, all at an affordable price.

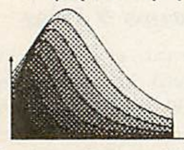
For your copy of the new Acme PDSL newsletter and catalogue, which details hundreds of disks at prices as low as 83p each, send one pound to:

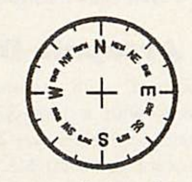
Acme PDSL (AU9)
17 May Avenue, Wollaton
Nottingham NG8 2NE

UTILITIES

!DrawAid

δ=√(ψ/(1+λ/ψ−1)^2)





Produce *!Draw* files as varied as these from your own *BASIC* programs.

!DrawAid comes with an Introductory Tutorial, a Reference Guide, and 20 Example Programs. PRICE **£10** including postage. no VAT

or send SAE for information sheet.

CARVIC Manufacturing,
Moray Park, Findhorn Road,
FORRES, Moray IV36 0TP

STATISTICS

STATISTICS

The ESTABLISHED system *for the Acorn Archimedes is*

FIRST

Write or telephone for details to

SERIOUS STATISTICAL SOFTWARE

Lynwood, Benty Heath Lane, Willaston
South Wirral L64 1SD

Tel: 051-327 4268

Now includes an On-Line Manual

SPECIAL NEEDS

C.J. COMPUTING
SPECIAL NEEDS

SALES • REPAIRS • SPECIAL NEEDS

Please contact us for all your Acorn computers (Hardware & Peripherals)
We specialise in tailoring computer systems for special needs

Tel: (0454) 615905
Stoke Lodge, Bristol

CREATOR ARCADE GAMES DESIGNER £38.95
Produce your own arcade-style games with *Creator*. No BASIC or ARM code programming knowledge needed.
ALPS ADVENTURE SYSTEM £34.95
ALPS allows you to create commercial-quality text adventures with graphics. Full RISC OS application.
COPS £19.95
A humorous adventure with text and graphics - spend a day as a cop on Hall Street and find the kidnapped Chief.
PLAGUE PLANET £14.95
A tough sci-fi text adventure with over 250 locations.
UK P+P **free** on all orders. EC: £2.50, Outside EC: £3.50
ALPINE SOFTWARE, Dept (BAU5) Tel: 0762 342510
PO BOX 25, Portadown, CRAIGAVON, BT63 5UT

Guardians
Of The Labyrinth

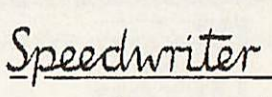
A new game from
Soft Rock Software
21 Great George Street, Bristol, BS1 5QT
£3.49 including postage
(Archimedes/A3000 only)

Also available: Escape from Exeria etc for the Arc/A3000 at £3.49 inc

DISABLED?

ENCODER

Keyboard Emulator on disc



speeds up your typing

Le Computer 0245 362225

!!VARIOUS!!

ROOM 7 SOFTWARE

INVESTMENT ANALYSER 2 MONITORS SHARES, TRUSTS ETC **£19.98**

INFLATE STORES DATA ON RPI AND FT-A INDICES **£19.98**

FOOD ANALYSIS £10.58

LIBRABASE £11.95

ELECTRONIC HOBBYIST £22.99

CENTRAL HEATING CALCULATOR £23.50
ELECTRICAL CABLE SELECTOR £17.62

MATRIX £7.05

EASY BANKER £8.50

POCKET ENGINEER £35.25

Our catalogue contains full details of these and other programs for Acorn computers.
Prices include postage and V.A.T. at 17.5%

Most of our programs are available for the Electron/BBC B/B+/Master, COMPACT and ARCHIMEDES range on 5.25" and 3.5" discs.

Letters/cheques to:
W.L. COMPUTER SERVICES.
Dept. 2, First floor, H.S.L. Building. 437 Warrington Road, Rainhill.
Merseyside L35 4LL. Tel: 051-426 7400. Fax. 051-493 1425

VISA



SIGNWRITER
for the BBC & Archimedes

Professional quality lettering that keeps it's smooth outline at any size for 1/2" to max printer width 8" (BBC) Produce quality Banners, Posters, Letterheads, Adverts, Signs, Tickets & Notices in minutes.

BBC Disk £29.95 –
Archimedes £39.95

Black & Coloured Ribbons for many printers. Please ring for availability and prices.
(All prices include VAT and Delivery)

WIGHT SCIENTIFIC
44 ROAN STREET, GREENWICH, LONDON SE10 9JT
Telphone 081-858 2699 Fax 081-853 4416

Access and Visa accepted

WORD PROCESSING

CORPLAN
FOR SERIOUS WORK WITH WORDWISE PLUS

* Descriptive indexing for your letters & documents.
* Your own library of layout forms, letterheads etc.
* Automatic import of addresses, references, dates etc.
* CORPLAN does the layout, you just type the text!
* Resident utilities for mailmerge, label printing etc.
* Many other features, including Inter-Word link.
* For B, B+ & Master. Needs discs & Wordwise Plus.
* Pack contains disc, tutorial manual, keystrip etc.
* Price £19.50, post free UK. 14 day refund.
* Free information sheet available.

CORPLAN Computer Systems
Three Gables, 7A Talbots Drive,
Maidenhead, Berks, SL6 4LZ
Phone or Fax: (0628) 24591

VISA

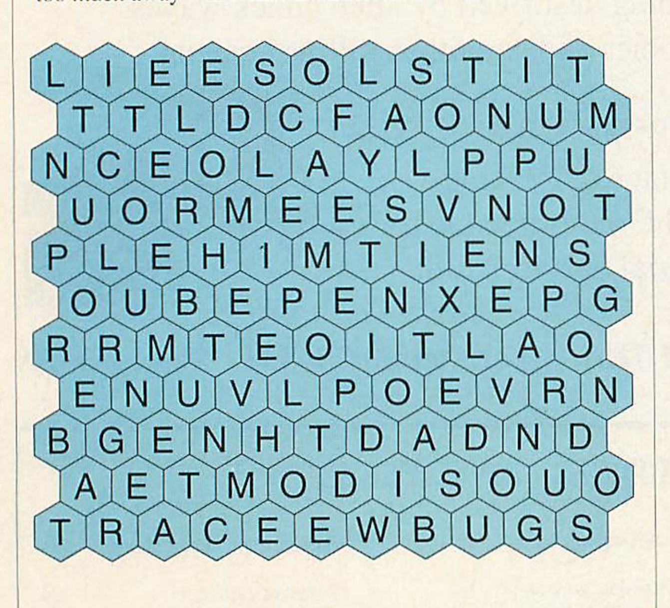
ACORN USER ADVERTISEMENT PAGES – NOVEMBER 1991



Six-pack

Twenty words have been hidden in the hexagonal grid below. Words may start anywhere in the grid and can be spelled out by 'tracking' from hex to hex. A word may change direction at any point and any number of times. No letter in the grid is used more than once. Once all of the 20 words have been found, the remaining letters will form an anagram of something to do with computing. Simply write this on the back of a postcard or sealed envelope and send it to 'November Competition' at the usual address. Closing date is Friday 8 November 1991. The solution and winner will be published in the January issue.

Oh, almost forgot! All 20 words have a connection (which should become pretty obvious after a while) and although 'BUGS' may be a bit of a red herring, 'TRACE' is one of the words. Finally, you should be left with – well, let's not give too much away – less than 20 letters at the end.

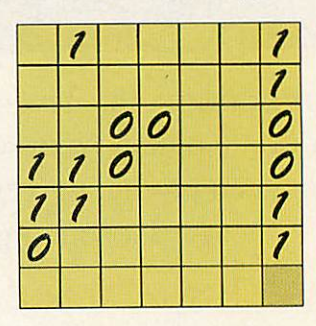


Puzzle set by Gallienus

Spy Lines

Paul de Sa of Newcastle upon Tyne has sent in this little puzzle and in return we'll send him £10.

M, the head of MI5, needed to send a message to top field agent K. He encoded the message as six six digit binary numbers and wrote them in a column forming a square of 6x6 digits. To complete the encoding, he added a 'parity bit' to the right hand end of each row and the bottom of each column so that there were an even (or zero) number of ones in each line. Unfortunately M had used the branch's latest disappearing ink, so all K got was the message below. Fortunately K knew that M's messages always contained 36 ones and they were symmetrical about the diagonal from top right to bottom left.

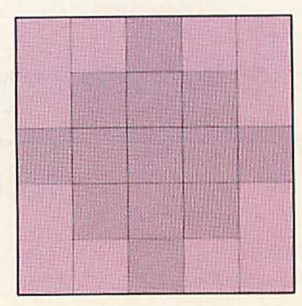


You don't need to decipher the message, but can you work out what the coded message should have looked like?

Odd Magic Square

Our second 'puzzle for fun' this month comes from **Mr D Jackson** of Redhill, who gets £10 for his efforts.

Here is a 5x5 magic square with some internal squares shaded. Can you distribute the numbers one through 25 in such a way that all the rows, the columns and the two main diagonals all add up to the same total with only odd numbers appearing in the 13 shaded squares?



Solutions to October's puzzles

STEPWISE

Pete the Purple Pirate started digging for his treasure in square A3 after taking 44 paces.

HEX-CHAIN-GE

```
  0 4 8 C
  1 5 9 D
  2 6 A E
+ 3 7 B F
 ---------
  7 8 9 6
 ---------
```

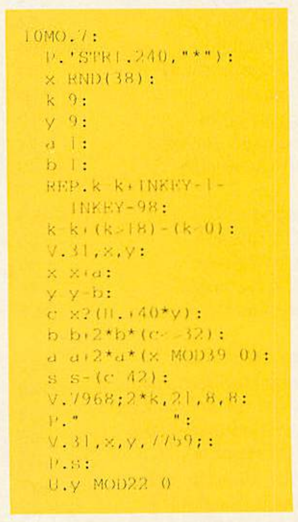
Solution to September's prize puzzle

This rather tricky puzzle could be solved 'by hand' but really needed some computer assistance. Miss O'Nardge did benefit from use of the organisation's computer – it found no less than four routes which would take 25 minutes and involve entering 33 rooms. The first correct solution came from **Nigel Parker** of Newton Abbot, who wins £25.

Gürth Dragönslayer

Deep in the heart of Hurnagii swamp all was quiet. Fog curled lazily round the stumps of rotting trees. The mighty Polupha river began its life here before following its turbulent course to the distant ocean. High above, a Viridian bird erupted from its nest and let out a piercing screech.

The cry brought Gürth back to his senses. He stood on a mound before the ruined temple of Gethmion, his senses ever vigilant for the minions of the evil lord, Zarth. He hefted his mighty battle sword, Aracara, from hand to hand, its keen blade hungry for more of Zarth's hordes. With a speed that belied his size, Gürth leapt down the slope to the temple and started into the darkness...



```
10MO.7:
  P.'STRI.240,"*"):
  x=RND(38):
  k=9:
  y=9:
  a=1:
  b=1:
  REP.k=k+INKEY-1-
    INKEY-98:
  k=k+(k>18)-(k<0):
  V.31,x,y:
  x=x+a:
  y=y-b:
  c=x?(H.+40*y):
  b=b+2*b*(c=32):
  a=a+2*a*(x MOD39=0):
  s=s-(c=42):
  V.7968;2*k,21,8,8:
  P."          ":
  V.31,x,y,7759;:
  P.s:
  U.y MOD22=0
```

Unfortunately, Gürth Dragönslayer was busy, so here's a one-line *Breakout*. SHIFT and Z move your bat.